# MOTOROLA

BASE STATION

# AUXILIARY SPEAKER KITS

AEPD-8596-O(CE2286-C7)

MODEL TSN6006A OR TSN6007A AUXILIARY SPEAKER KIT

MODEL TABLE

| MODEL | DESCRIPTION |
|---|---|
| TSN6005A | Auxiliary Speaker Kit, 3 ohms input impedance |
| TSN6006A | Auxiliary Speaker Kit with volume control; approximately 3 ohms input impedance |
| TSN6007A | Auxiliary Speaker Kit with volume control and impedance matching transformer; 500 ohms input impedance |

## 1. DESCRIPTION

The Auxiliary Speaker Kit provides an additional speaker for use with a base station or the remote control console associated with the base station. The speaker housing includes rubber feet for convenient placement on a desk top or other working surface.

A choice of one of the three models listed in the preceding table provide flexibility of application. A 3-ohm unit with or without volume control is available for parallel connection with the existing remote control speaker, or a 500-ohm input unit is available for connection across the high impedance audio line.

## 2. CONNECTIONS

Each of the Auxiliary Speaker Kits can be connected in parallel with the existing base station or remote control speaker. When such parallel connection is made, the audio performance characteristics will remain at a satisfactory level.

The TSN6005A or TSN6006A Auxiliary Speaker Kit should be connected with a two-wire line (not supplied) to the terminal board or other point of the remote control unit of the base station which will provide a 3-ohm supply. The TSN6005A model may be connected to be under the control of the remote control console speaker volume control.

Connect the TSN6007A Auxiliary Speaker Kit (which presents a 500-ohm input impedance) to the primary of the base station impedance-matching speaker transformer.

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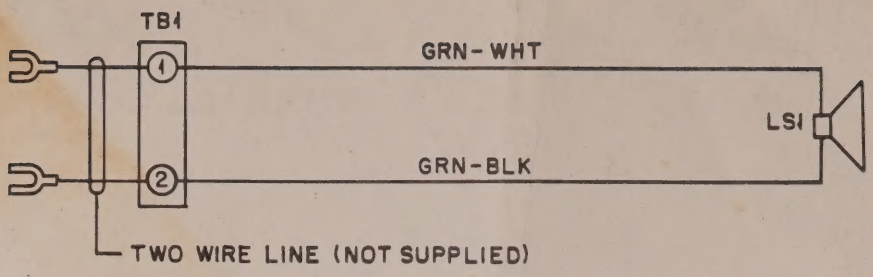
Issue - O



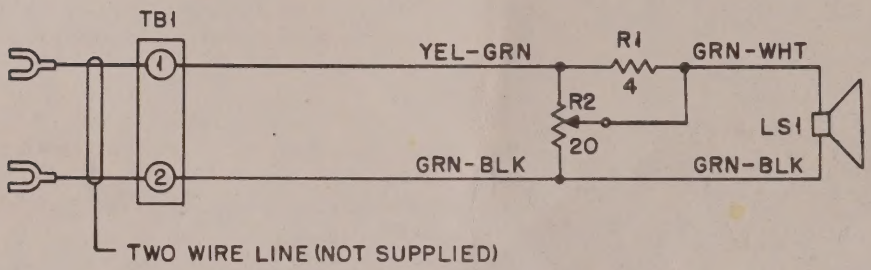

MODEL TABLE

| MODEL | SUFFIX | DESCRIPTION |
|---|---|---|
| TSN6005A | | AUXILIARY SPEAKER KIT 3 OHMS INPUT IMPEDANCE |

DIAGRAM NO. 63A81104A21

MODEL TSN6005A SCHEMATIC DIAGRAM

63A81104A21-O



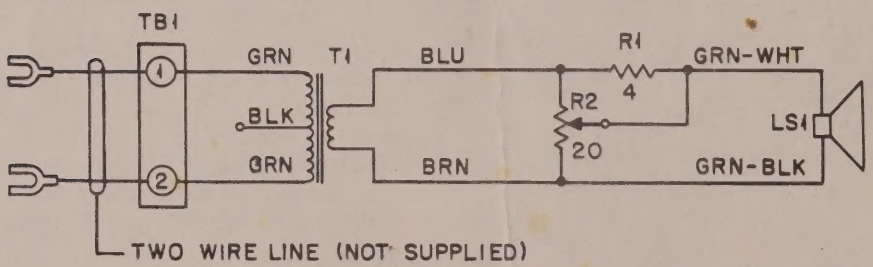

MODEL TABLE

| MODEL | SUFFIX | DESCRIPTION |
|---|---|---|
| TSN6006A | | AUXILIARY SPEAKER KIT WITH VOLUME CONTROL; APPROX. 3 OHMS INPUT IMPED. |

DIAGRAM NO. 63A81104A22

MODEL TSN6006A SCHEMATIC DIAGRAM

63A81104A22-O



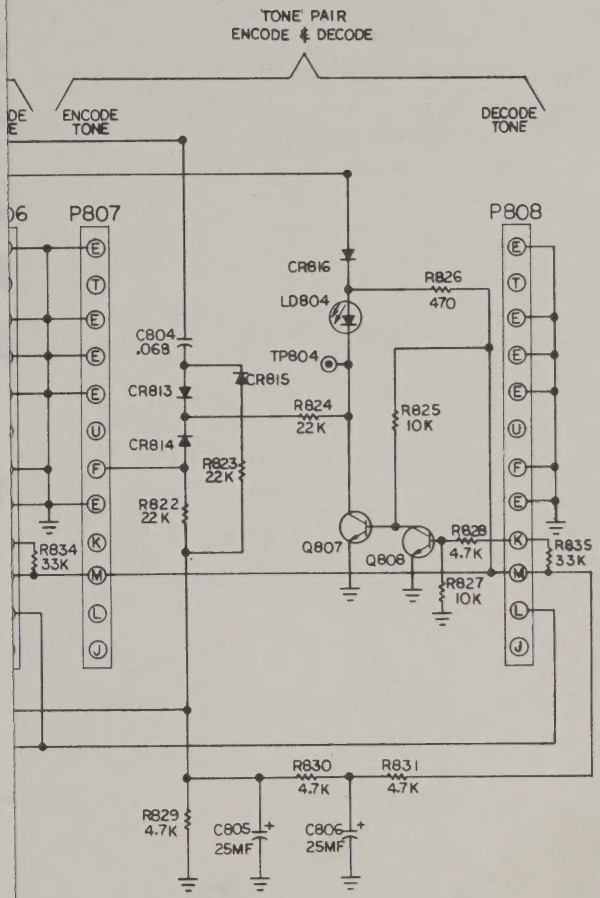

MODEL TABLE

| MODEL | SUFFIX | DESCRIPTION |
|---|---|---|
| TSN6007A | | AUXILIARY SPEAKER KIT WITH VOLUME CONTROL AND IMPEDANCE MATCHING TRANSFORMER; 500 OHMS INPUT IMPEDANCE. |

DIAGRAM NO. 63A81104A23

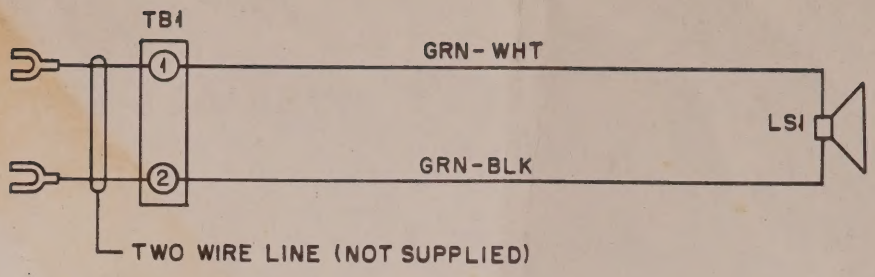
MODEL TSN6007A SCHEMATIC DIAGRAM

63A81104A23-O




¼W, 10%.
IN MICRO FARADS.
RE SPS952.
4148.
P807 ARE
SCHEMATIC 304-007.
P808 ARE
SCHEMATIC 501-275.
G TIE POINTS

TONE BOARD SCHEMATIC



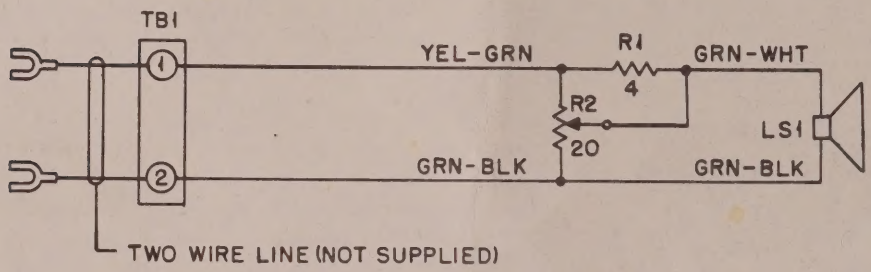

MODEL TABLE

| MODEL | SUFFIX | DESCRIPTION |
|---|---|---|
| TSN6005A | | AUXILIARY SPEAKER KIT 3 OHMS INPUT IMPEDANCE |

DIAGRAM NO. 63A81104A21

MODEL TSN6005A SCHEMATIC DIAGRAM

63A81104A21-O



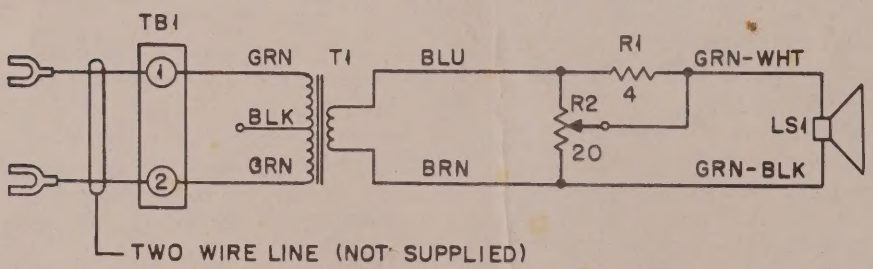

MODEL TABLE

| MODEL | SUFFIX | DESCRIPTION |
|---|---|---|
| TSN6006A | | AUXILIARY SPEAKER KIT WITH VOLUME CONTROL; APPROX. 3 OHMS INPUT IMPED. |

DIAGRAM NO. 63A81104A22

MODEL TSN6006A SCHEMATIC DIAGRAM

63A81104A22-O



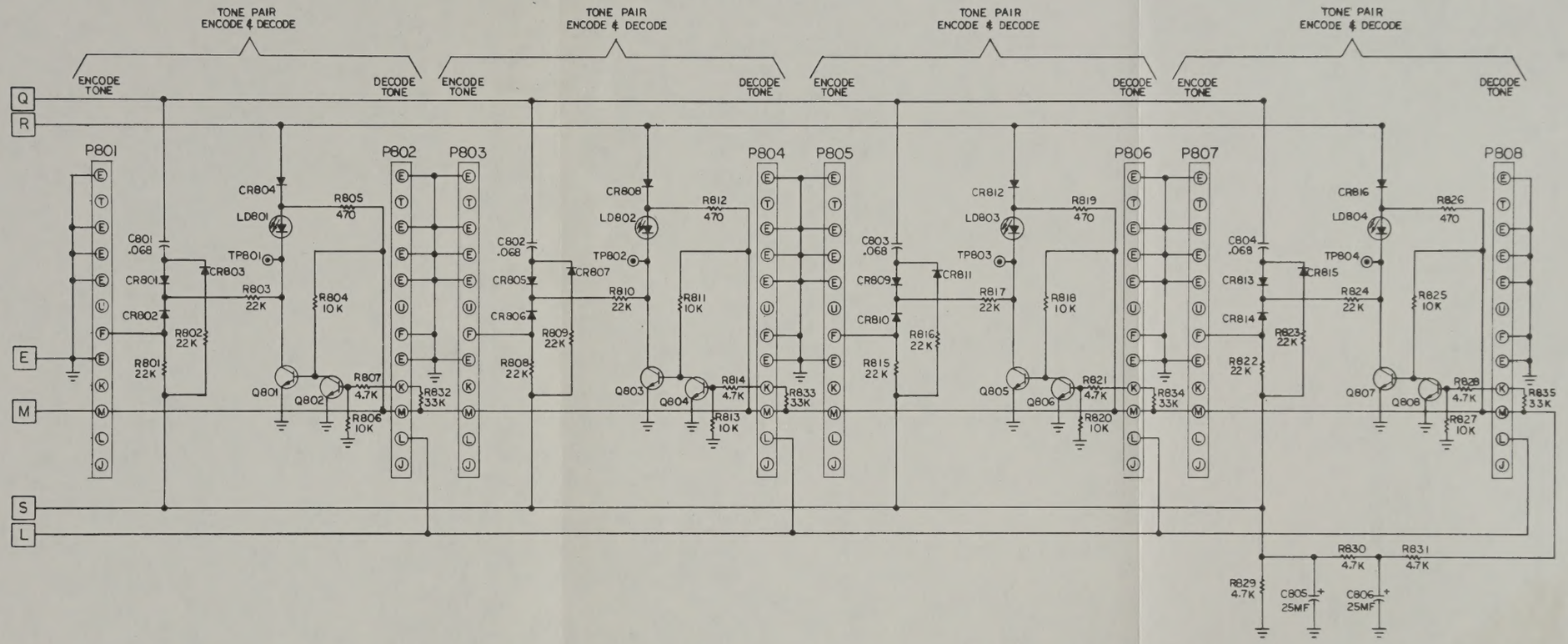

MODEL TABLE

| MODEL | SUFFIX | DESCRIPTION |
|---|---|---|
| TSN6007A | | AUXILIARY SPEAKER KIT WITH VOLUME CONTROL AND IMPEDANCE MATCHING TRANSFORMER; 500 OHMS INPUT IMPEDANCE. |

DIAGRAM NO. 63A81104A23

MODEL TSN6007A SCHEMATIC DIAGRAM

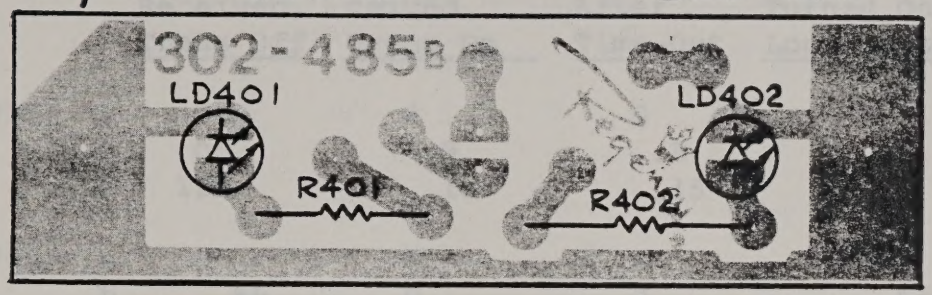
63A81104A23-O




1. UNLESS OTHERWISE NOTED, ALL RESISTORS ARE ¼W, 10%.
2. UNLESS OTHERWISE NOTED, ALL CAPACITORS ARE IN MICRO FARADS.
3. UNLESS OTHERWISE NOTED, ALL TRANSISTORS ARE SPS952.
4. UNLESS OTHERWISE NOTED, ALL DIODES ARE IN4148.
5. CIRCLED LETTERS FOR P801, P803, P805 AND P807 ARE CORRESPONDING TIE POINTS REFERENCED ON SCHEMATIC 304-007.
6. CIRCLED LETTERS FOR P802 P804 P806 AND P808 ARE CORRESPONDING TIE POINTS REFERENCED ON SCHEMATIC 501-275.
7. LETTERS WITHIN SQUARES ARE CORRESPONDING TIE POINTS REFERENCED ON SCHEMATIC 704-002.

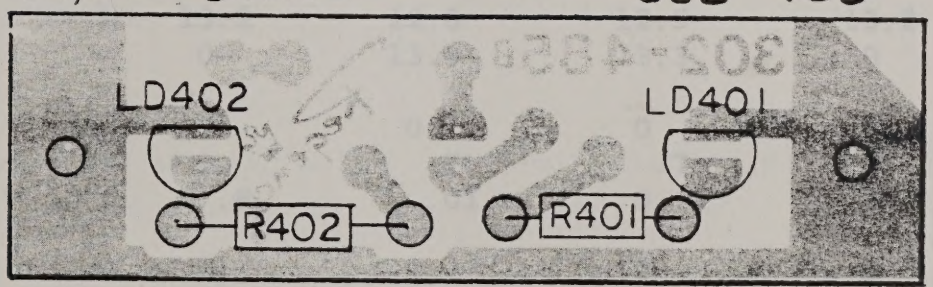
## 7-13 AUXILIARY TONE BOARD SCHEMATIC

ON/OFF BOARD 302-485




BOTTOM VIEW

ON/OFF/BOARD 302-485




TOP VIEW

7-14 L.E.D. BOARD

7-15 REPEATER CONTROL BOARD AND AUXILIARY TONE BOARD VOLTAGES

REPEATER SETUP FOR TONE SQUELCH OPERATION

| | | No Signal Received, Trans Off | Signal Received, Trans On | Same, After Time-Out | Transmitter Turned On By Local Mike |
|---|---|---|---|---|---|
| Q701(Q703,Q705) | e | 0 | 0 | 0 | 0 |
| | b | 0 | .9 | .8 | 0 |
| | c | 12 | .15 | .15 | .8 |
| Q702(Q704,Q706) | e | 0 | 0 | 0 | 0 |
| | b | .65 | 0 | 0 | .65 |
| | c | 0 | .2 | .8 | 0 |
| Q707 | e | 0 | 0 | 0 | 0 |
| | b | .72 | .72 | .72 | .72 |
| | c | 0 | 0 | 0 | 0 |
| Q708 | e | 9 | 9 | 9 | 9 |
| | b | 8.4 | 8.4 | 8.4 | 8.4 |
| | c | 9 | 9 | 9 | 9 |
| Q709 | e | 13 | 13.5 | 13.5 | 13 |
| | b | 13.2 | 12.6 | 12.5 | 13.2 |
| | c | 0 | 13.3 | 13.3 | 0 |
| Q710 | e | 0 | 0 | 0 | 0 |
| | b | 0 | .7 | .7 | 0 |
| | c | .8 | .01 | 0 | 0 |
| Q711 | e | 0 | 0 | 0 | 0 |
| | b | .8 | 0 | 0 | .8 |
| | c | 0 | .2 | 13 | 0 |
| Q712 | e | 14 | 13.5 | 13.5 | 14 |
| | b | 13.5 | 13 | 12.8 | 13.5 |
| | c | 14 | 13.5 | 13.5 | 14 |
| Q713 | e | 0 | 0 | 11.8 | 0 |
| | b | 0 | 0 | 12.2 | 0 |
| | c | 13.5 | 13.5 | 13 | 13.5 |
| Q714 | e | 0 | 0 | 0 | 0 |
| | b | 0 | 0 | .82 | 0 |
| | c | 10 | 10 | .08 | 0 |

REPEATER SETUP FOR TONE SQUELCH OPERATION(cont.)

| | | No Signal Received, Trans Off | Signal Received, Trans On | Same, After Time-Out | Transmitter Turned On By Local Mike |
|---|---|---|---|---|---|
| Q715 | e | 0 | 0 | 0 | 0 |
| | b | 0 | 0 | .5 | 0 |
| | c | 0 | 0 | 6.2 | 0 |
| Q716 | e | 0 | 0 | 0 | 0 |
| | b | .001 | .72 | .45 | 1.1 |
| | c | 13 | 0 | 13.6 | .3 |
| Q717 | e | 0 | 0 | 0 | 0 |
| | b | .75 | .7 | .74 | .75 |
| | c | 12.8 | 0 | 0 | 0 |
| Q718 | e | 0 | 0 | 0 | 0 |
| | b | .7 | .7 | .7 | .3 |
| | c | 0 | 0 | 0 | 11.4 |
| TP701(TP702, TP703,TP801, TP802,TP803, TP804)* | | 13 | .15 | .15 | .15 |

*Reading on socket or T.P. of tone receiver for tone being received.

# SECTION 8

# REPEATER SETUP INSTRUCTIONS

## SECTION 8 REPEATER SETUP INSTRUCTIONS

Assuming that the receiver and transmitter are tuned properly to their respective channels, and that the antenna system, with its duplexers and/or filters has been properly installed and tuned, the following instructions should be followed to set the repeater into operation.

### 8-1 PREPARATION FOR NOISE SQUELCH OPERATION

In this type of operation, no tone boards are installed in the tone receptacles, and the transmitter is activated by any signal that operates the receiver noise squelch system.

1. Check to see that Jumper JU704 is connected in place. JU704 is located on the circuit board near P706, and goes from Pin L to Pin J of P706.

2. Connect the "Tone Test Select Lead," JU703 (Blk) to the "ground" pin P711.

3. Connect JU701 (Yel) to the "Squelch Operate" pin P708.

4. Adjacent to each of the tone decoder plugs, P702, P704, P706, P802, P804, P808, there must be a 33,000 ohm "pull-up" resistor, connected to Pin M and Pin K of the connector. Be sure that these are in place.

Turn up the front panel volume control so you can hear the receiver in the local loudspeaker. The transmitter should now be activated whenever a signal opens the noise squelch, or if the noise squelch is put into the noisy condition by a setting of the squelch control. Note that the transmitter will be automatically turned off if the noise squelch system has held it on continuously for about three minutes. Also, note that the transmitter does not turn off instantly after the noise squelch silences the receiver. About three seconds of delay is provided by C714.

### 8-2 AUDIO LEVEL SETTING, NOISE SQUELCH OPERATION

The proper setting of audio levels is very important in the repeater operation. Excessive audio level settings can cause the performance of the repeater to be seriously degraded and can make the repeater transmissions sound noisy and distorted. It is recommended that the following procedures be followed, without any attempts at shortcuts.

1. The transmitter modulation deviation control, R240, located on the transmitter chassis should be set as follows:

Inject a 100 millivolt (.1 volt) tone at 1,000 Hz into the microphone jack, (Pin #4 high, Pin #1 ground), and adjust R240 so modulation just reaches +5 KHz peak. The transmitter may be activated by TP101, TP102, or TP103.

2. Set the repeat function modulation input audio level control, R728, located on the transmitter as follows:

Connect a FM signal generator capable of being set to within .00025% of channel frequency to the receiver antenna port.

Set the signal generator to the receive channel frequency, modulate the generator with a 1,000 Hz tone, with ±3 KHz peak modulation deviation. Adjust generator attenuator to provide a strong, noise free signal and assure yourself that the signal is properly centered in the receiver, and that the receiver is delivering a clean, 1,000 Hz tone output.

Then connect an AC VTVM to the arm of R728, and adjust R728 to obtain a reading of .22 volts RMS. It is best to disable the transmitter when making this measurement (by temporarily removing J702 from P709), to avoid false voltmeter indications which might be caused by R.F. pickup in the voltmeter test leads.

Alternate

If an independent signal generator and a modulation meter is available, the following procedure is preferred for obtaining an accurate setting of the repeat function level control, R278.

Connect a FM signal generator, capable of being set to within .00025% of the channel frequency, to the receiver antenna port. Set the signal generator on the receive channel, modulated by a 1,000 Hz tone, with 3 KHz peak modulation deviation. Adjust the generator attenuator to provide a strong, noise free, signal and assure yourself that the signal is properly centered in the receiver band pass, and that the receiver is delivering a clean, 1,000 Hz tone output. Connect a FM modulation meter to obtain signal from the transmitter, and adjust R728 to obtain exactly 3 KHz peak modulation deviation.

## 8-3 PREPARATION FOR TONE SQUELCH OPERATION

### Tone Encoder and Decoder Installations

The repeater has sockets to accommodate up to seven different CTCSS tones. For each tone accommodated, one tone decoder and

one tone encoder is used.(Some repeaters operate without any outgoing tone. For such use, the tone encoder need not be installed.) Normally, the tone encoders and decoders are installed at the factory, and the initial order specifies the tone frequencies to be used. However, if it is desired to add CTCSS tone in the field, or if additional CTCSS tones are to be added in the field, the following instructions apply.

One MA-95 or MA-121 tone encoder should be ordered for each tone frequency required. Tone frequency must be specified on MA-95's.

One MA-90 or MA-166 tone decoder should be ordered for each tone frequency required. Tone frequency must be specified on MA-90's.

NOTE: The MA-90 and MA-116 are the same items as the tone boards used in the MCU series mobiles. They are used as an encoder-decoder in the mobiles, but are used as a decoder only in the repeater. Since these boards have both encoding and decoding sockets of the repeater to function as a decoder, or plugged into the encoding sockets of the repeater to function as an encoder.

TONE SQUELCH OPERATION

In tone squelch operation, the repeater transmitter is activated only by signals bearing the appropriate tone squelch frequency(s).

To prepare the repeater for tone squelch operation, plug JU701 (Yel) to P708. Plug JU702(Wht) to P709. Then proceed with the following instructions for tone encoder and decoder installations.

For the first tone to be installed, install the encoder in P706. If the unit has not already been equipped for tone operation, remove the wire jumper JU704, which is located on the Repeater Control Board, next to P706.

Install subsequent tones as follows:

| | Encoder | Decoder |
|---|---|---|
| Second Tone | P703 | P704 |
| Third Tone | P701 | P702 |
| Fourth Tone | P801 | P802 |
| Fifth Tone | P803 | P804 |
| Sixth Tone | P805 | P806 |
| Seventh Tone | P807 | P808 |

When a tone decoder board is installed in each of the connectors P702, P802, etc., the 33,000 ohm "pull-up" resistor just adjacent to that connector should be clipped out of the circuit.

This pull up resistor must remain in the circuit of each unused connector, and must be removed from the circuit on each connector which has a tone decoder installed.

If an operator is stationed at the repeater location, it is normally desired that he will hear transmissions from mobiles on only one of the installed tones. To accomplish this, connect the Tone Select Test Lead to one of the "TONE" test point pins which is physically located between the encode and decode module for that particular tone, i.e., TP701 or TP702, etc. (Monitoring provisions incorporating the grounded microphone hang-up clip permit the operator to monitor all incoming signals when the microphone is removed from its hanger.)

After installation of the tone boards, the encoder output level must be set, as outlined in the level setting procedure. After installing all of the tone encoder boards, rotate the tone level control, R605 on each tone encoder all the way counterclockwise tc · e for level setting procedures.

## 8-4 AUDIO LEVEL SETTING, TONE SQUELCH ENCODER OPERATION

The first steps in the level setting procedure are to set the transmitter modulation deviation, and the repeat function audio level control R728. The procedures to follow are the same as those outlined in step 1 and 2 of the noise squelch level setting procedure, given in Section 8-2. In the following step one, however, set the peak modulation deviation to 4.5 KHz instead of the 5 KHz given in Section 8-2.

Once these two steps have been completed, you are ready to set the transmit tone levels. Remove the signal generator from the receiver, and connect the tone select test lead to TP703. Then activate the transmitter by pushing the PTT switch on the microphone. Then, set R618, the tone output level control, on the tone encoder in P705 to obtain .5 KHz tone modulation deviation, as indicated by a FM modulation meter. Then proceed to set the tone levels on the remaining tone generators as follows:

| Connect Tone Select Test Lead To: | Set R618 Level Control On Tone Encoder Located In Connector: |
|---|---|
| TP702 | P703 |
| TP701 | P701 |
| TP801 | P801 |
| TP802 | P803 |
| TP803 | P805 |
| TP804 | P807 |

The next step is to set the tone receive threshold on all of the tone decoders. To do this, inject a signal of the proper channel

frequency into the receiver, and modulate this signal with the wanted CTCSS tone frequency, with a deviation of plus and minus 150 Hz. Then, adjust R612 (on the tone board) until the signal just opens the tone squelch system, and allows the receiver audio to function.

It is assumed that the tone operating frequency of all of the tone units used has already been set to the desired CTCSS channel. If this is not so, consult the frequency adjustment procedures in the manual on the MA-116 and MA-121.

## 8-5 AUDIO LEVEL SETTING, TONE SQUELCH DECODER OPERATION

When the MA-90 Encoder-Decoder is used, there is no need to make any adjustment of the decoder threshold sensitivity, because this level is fixed within the MA90 circuitry.

When the MA-116 Encoder-Decoder is used it is necessary to set the tone receive threshold adjustment, R612 (on the tone board) in this manner:

With the receiver in the receive condition, and the microphone hang up button grounded to the transceiver chassis, inject a signal of the appropriate channel frequency into the transceiver antenna jack, and modulate this signal with the wanted CTCSS tone frequency, with a deviation of plus and minus 200 Hz. Then, adjust R612 (on the tone board) until the signal just opens the tone squelch system, and allows the receiver audio to function.

After performing this adjustment of R612, check to be sure that the tone squelch will actually open when the tone deviation of the receive signal becomes as much as plus and minus 200 Hz. Further, check to be sure that noise bursts do not come through when the receiver is not receiving any incoming signal.

## 8-6 SQUELCH CONTROL SETTING

It is important that the squelch control for the noise operated squelch system in the receiver be set properly, regardless of whether noise squelch or tone squelch operation of the repeater is planned. The squelch control, R502, is located toward the front of the receiver's shielded housing, near the loudspeaker. It is located inside the main repeater top housing, so it will not be accessible to the operator.

The typical squelch control setting method, i.e., merely setting the control to the "edge" of the noisy portion may be used. It is more satisfactory, however, to set the squelch control for a known level of signal. This will enable the repeater to operate at proper sensitivity, yet will avoid service calls to reset the squelch because of operator annoyance at squelch openings not caused by wanted signals.

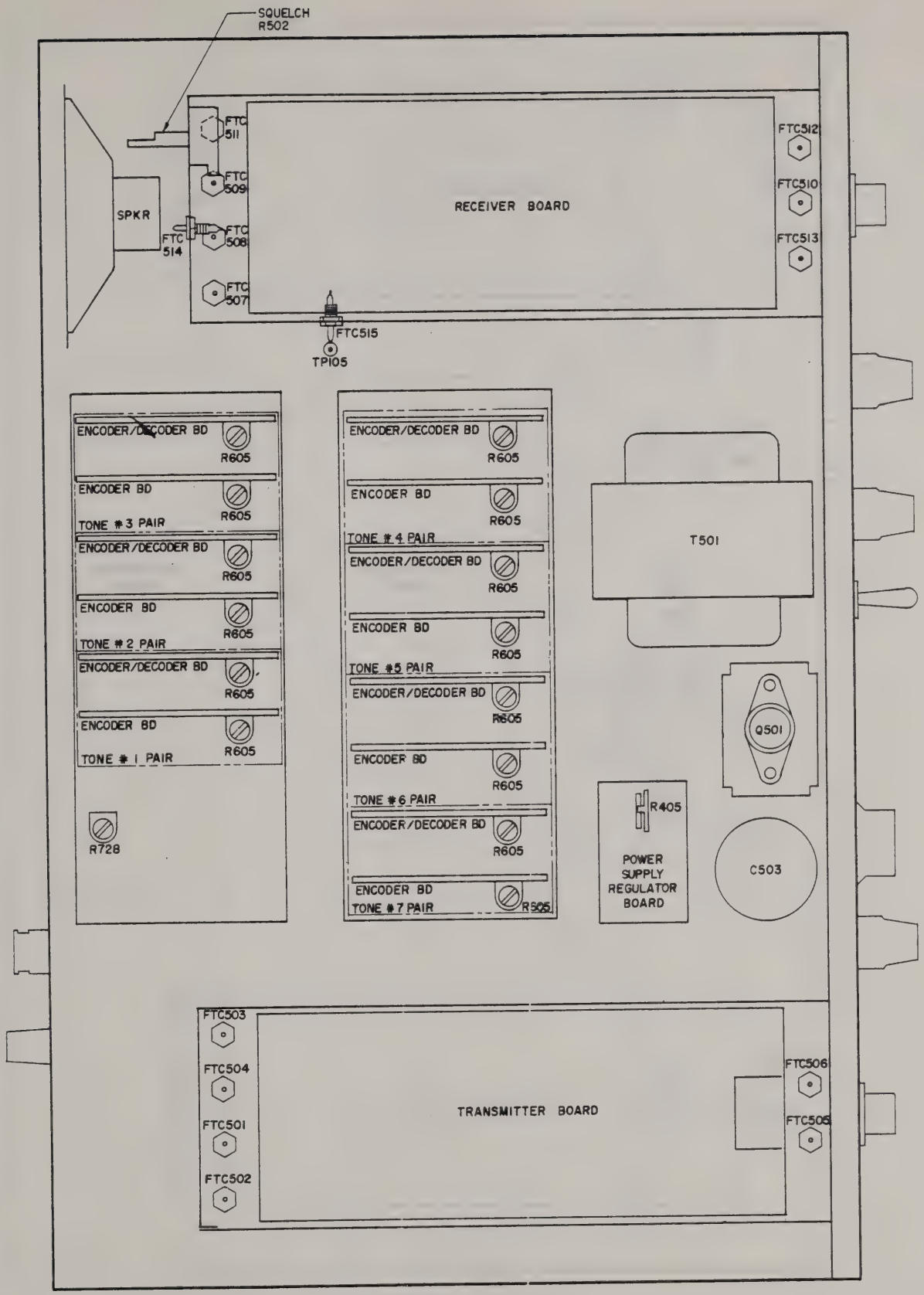
The preferred method is this: Remove the microphone from the hang-up hook, to disable the tone squelch (if used). Inject a signal from a signal generator into the receiver as shown in the Receiver Alignment Chart. Set the signal generator attenuator to provide a .3 microvolt signal to the receiver. Then set the squelch control to the point at which the squelch opens reliably when the signal is connected, and closes when the signal is removed.

## 8-7 FINAL LISTENING TESTS OF AUDIO LEVEL SETTING

When the repeater has been placed in final operation, it is a good idea to make a listening test to be certain that the Audio Level Setting procedure has been done properly. This is emphasized, because an improperly high level setting can make the repeater sound as if close-in mobiles are at the fringes of coverage, thereby seriously compromising the overall performance of the system.

An ideal way to conduct this listening test is as follows: Have a mobile go to the fringe of reception, and monitor how it sounds on the local loudspeaker in the repeater itself. Have the mobile find a location where you can hear it coming in with a somewhat noisy, but readable signal, and arrange for the mobile to stay fixed at that location. Then, monitor the repeater mobile speech by listening to it in close-in mobile, or at the control station. The apparent noise level should not be different than that observed in the repeater's local loudspeaker.

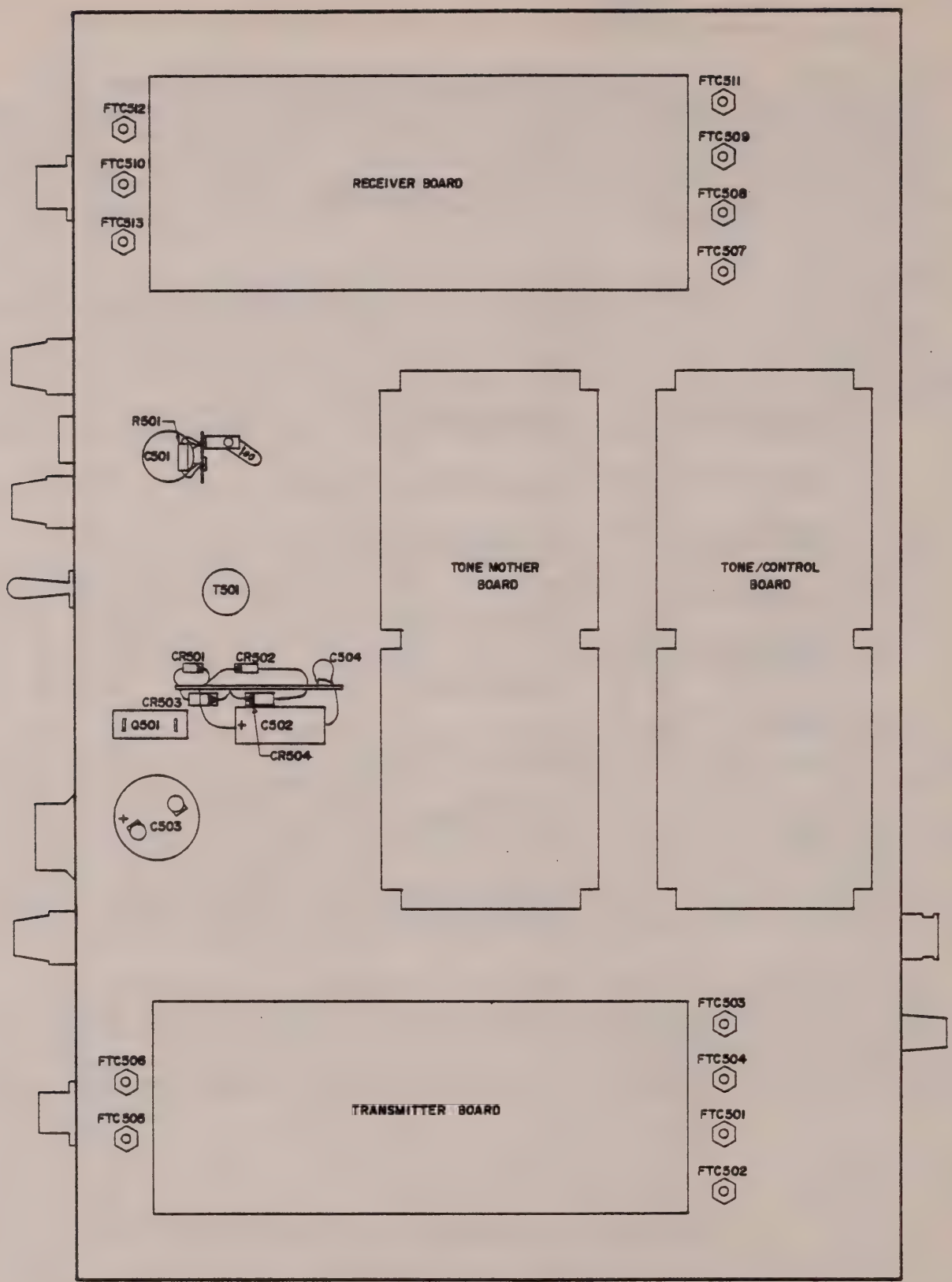
This procedure is suggested as a TEST of the setting of the Audio Level Setting--NOT as an appropriate way of making the setting. Once the listening test assures you that the level is set--mark its setting and be sure that it is not changed unless the proper test equipment and procedures (as outlined earlier) are carried through.



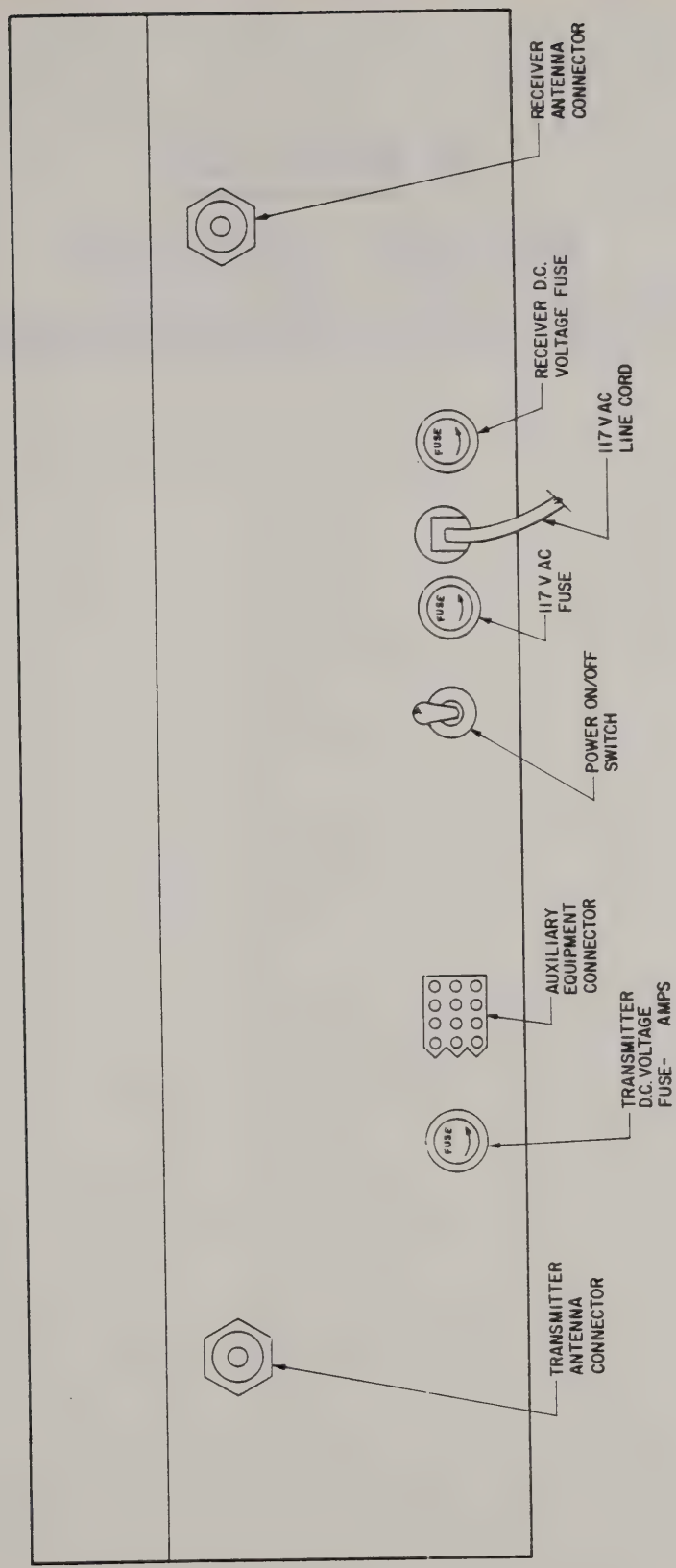

MA-90 & MA-95

8-7 SETUP ADJUSTMENT LOCATIONS

TOP VIEW




8-8 SETUP ADJUSTMENT LOCATIONS
BOTTOM VIEW




8-9 SETUP ADJUSTMENT LOCATIONS
REAR VIEW

# SECTION 9

# ANTENNA SYSTEM REQUIREMENTS AND TESTS

## SECTION 9 ANTENNA SYSTEM REQUIREMENTS AND TESTS

### 9-1 ISOLATION REQUIREMENTS OF EXTERNAL ANTENNA SYSTEM AND DUPLEXERS

For duplexer and antenna system planning purposes, the following isolation figures must be obtained, either by spacing of separate receive and transmit antennas, by filters, or by an antenna duplexer.

ISOLATION REQUIRED BETWEEN RECEIVER COAXIAL INPUT AND TRANSMITTER COAXIAL OUTPUT:

ISOLATION REQUIRED AT TRANSMIT FREQUENCY: 30 DB

ISOLATION REQUIRED AT RECEIVE FREQUENCY: 56 DB

These figures apply when using the typical 5 MHz spacing between receive and transmit frequencies.

For information on suitable antenna systems and duplexers, refer to the Regency REPEATER APPLICATIONS MANUAL.

### 9-2 SPECIAL REPEATER TESTS

For proper repeater action to occur, the repeater transmitter must not interfere with the operation of the repeater receiver. It will be noted that the transmitter and the receiver in the repeater are each located in separate, well shielded, compartments. Further, all power and other leads into these compartments are filtered as they enter the compartment. One should not expect proper repeater operation if all of the shields on the transmitter compartment and the receiver compartment are not in place, and well secured.

When installation is first made, the setup should be tested to assure yourself of the following:

1. That the shielding and filtering provisions on the repeater itself are suitably secure so that no interference is heard in the receiver from the transmitter.

2. That the antenna system provides suitable decoupling between the receiver coaxial input and the transmitter input to preclude any interference from the transmitter.

Unsatisfactory repeater performance can usually be traced to

an antenna system that does not satisfy the above condition.

## 9-3 TEST FOR TRANSMITTER-RECEIVER INTERFERENCE WITHIN THE REPEATER ITSELF

Step 1: Refer to Figure 9-5. Connect a signal generator into the repeater receiver antenna jack, and measure the receiver sensitivity, preferably by the 12 DB SINAD method. While making this measurement, the transmitter should be disabled by removing JU702 from P709. Assure yourself that the receiver is performing to the specification sensitivity.

Step 2: Keeping the signal generator attenuator at the point needed for 12 DB SINAD, as done in Step 1, connect a power meter and a 50 Ohm dummy load to the transmitter antenna coax, as in Figure 9-5. Then key the transmitter on by grounding P709. There should be no change in the sound from the receiver loudspeaker or any observed change in the 12 DB SINAD observed on the SINAD distortion meter. (If there is a change, you may want to know how much--increase the signal generator attenuator until the 12 DB SINAD indication is again achieved. The difference in attenuator DB readings is the amount of degradation.) Again, there should be no observed degradation. If there is, check the shield compartments to see that they are well fastened, and be sure that the power meter and signal generator coax leads are well separated.

## 9-4 TEST FOR TRANSMITTER-RECEIVER INTERFERENCE IN THE ANTENNA SYSTEMS

Regardless of whether you use two different antennas for receive and transmit functions, or whether you use a duplexer with a single antenna system, you will want to make careful tests to be sure that the antennas, or the duplexer provides sufficient isolation between the repeater transmitter antenna jack and the repeater receiver antenna jack. If enough isolation is not obtained, the transmitter may create serious interference with the receiver--reducing the repeater range, or making the repeater totally inoperative.

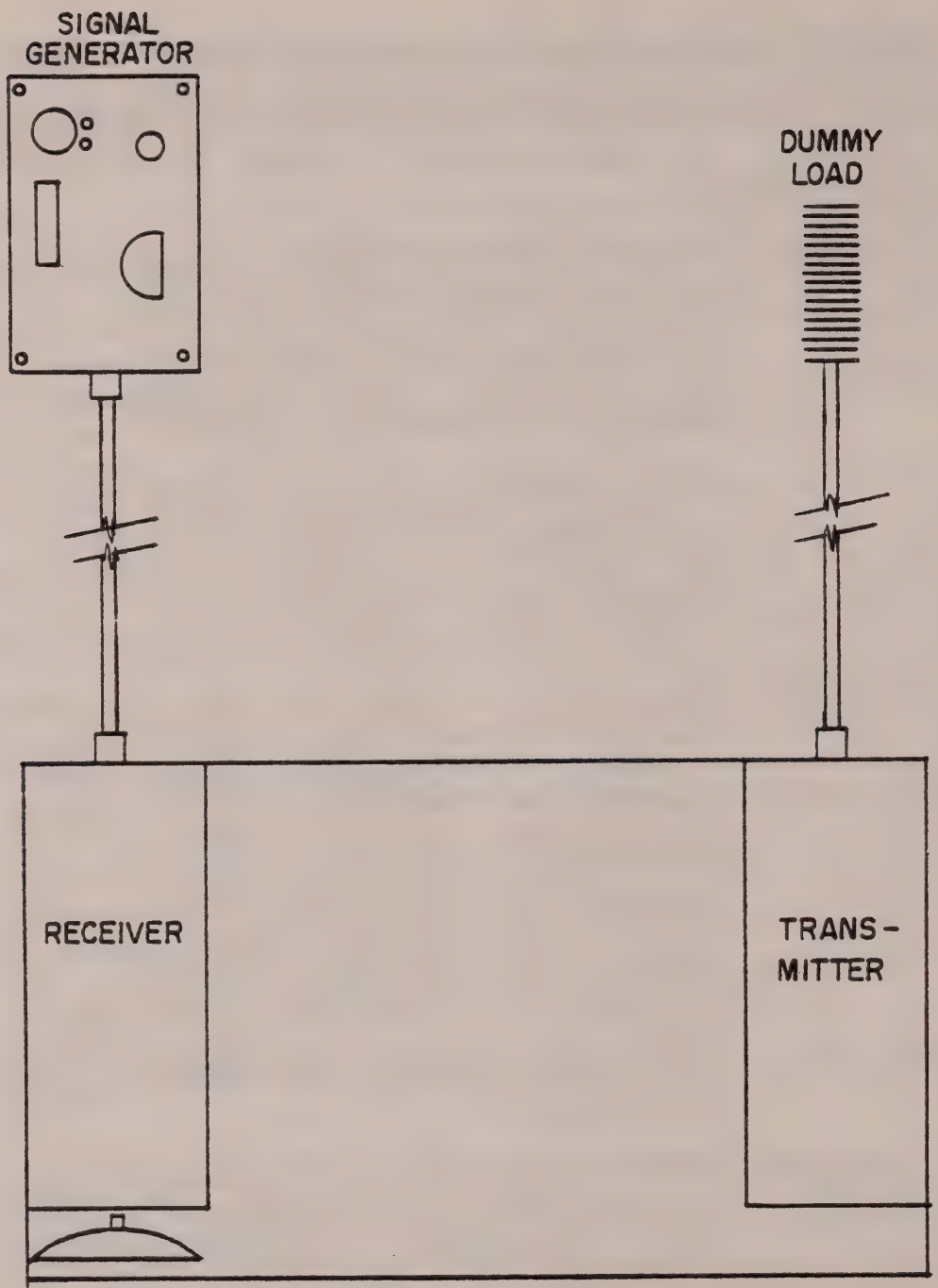
To make this test, first prepare a special fixture, which we will call a "signal injection fixture." Figure 9-6 shows the construction of this fixture. It consists of a coax "T", and a coaxial jumper. Note that center pin from one end of the coaxial

jumper is removed, and this jumper is labeled "SIGNAL GENERATOR." The purpose of this "signal injection fixture" is to permit the receiver antenna to be connected to the receiver input in the normal way, yet still permit a signal to be injected from the signal generator.

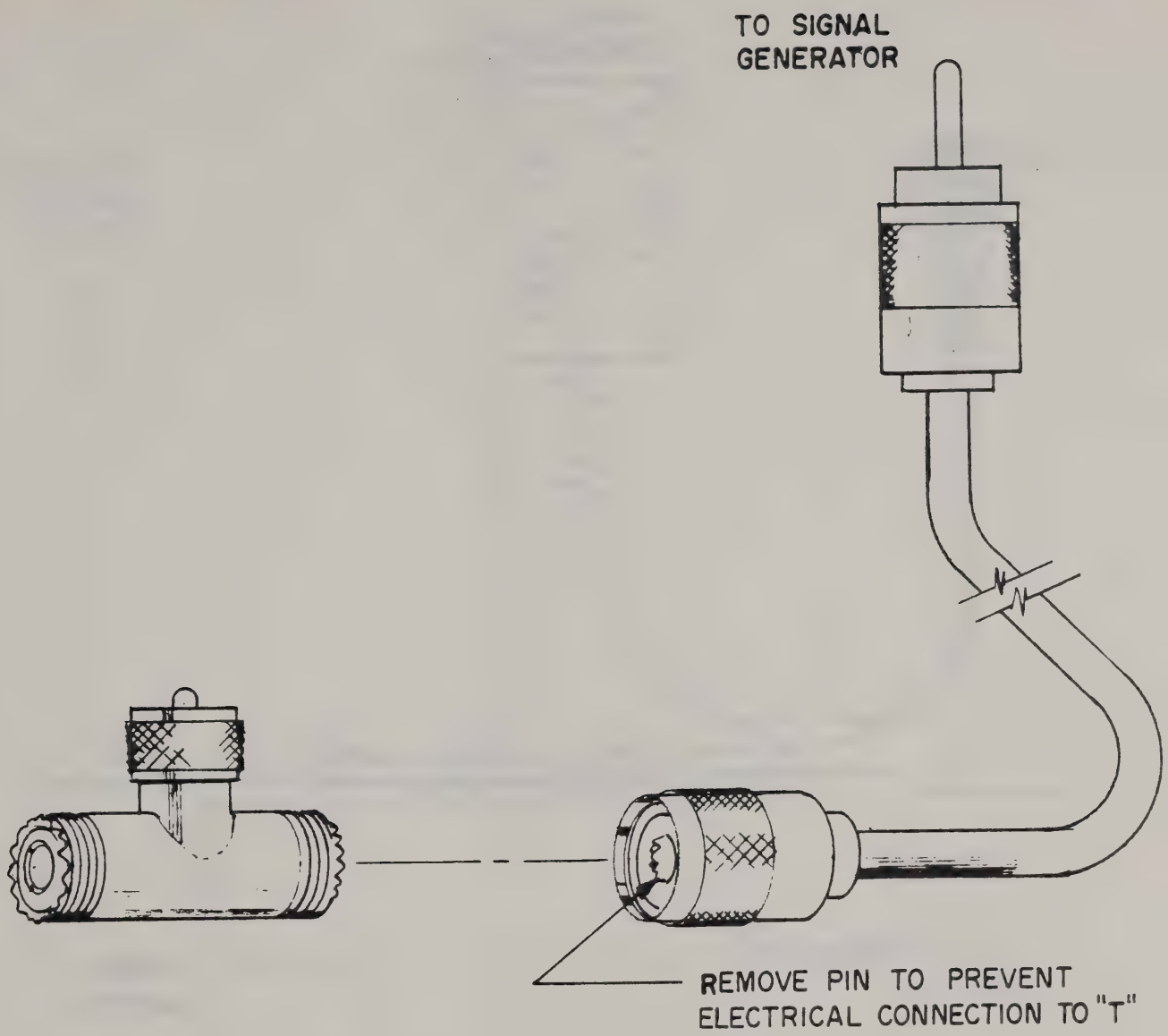
Step 1: When you have the fixture completed, connect it into the receiver antenna jack, with a 50 Ohm coaxial load, and the signal generator as shown in Figure 9-7. Disable the transmitter by removing JU702 from P709 and adjust the signal generator attenuator to obtain a 12 DB SINAD indication on the distortion meter. You will note that the generator output setting must be considerably higher than before. This is because of the attenuation caused by the cut-off pin in the signal injection fixture. Leave the attenuator at this setting. This step calibrates the Signal Injection Fixture for future tests.

Step 2: Remove the 50 Ohm load from the Signal Injection Fixture. Connect the transmit lead of the antenna system to the transmitter output connector. Connect the Receiver lead of the antenna system to the Signal Injection fixture, as shown in Figure 9-8. Leave JU702 disconnected so the transmitter still does not operate. At this point, the 12 DB SINAD indication on the distortion meter should remain unchanged. If there is any degradation, increase the attenuator setting to see how much. (Any change at this step would indicate that the antenna system is reflecting some unusual load on the receiver, and this should be corrected.)

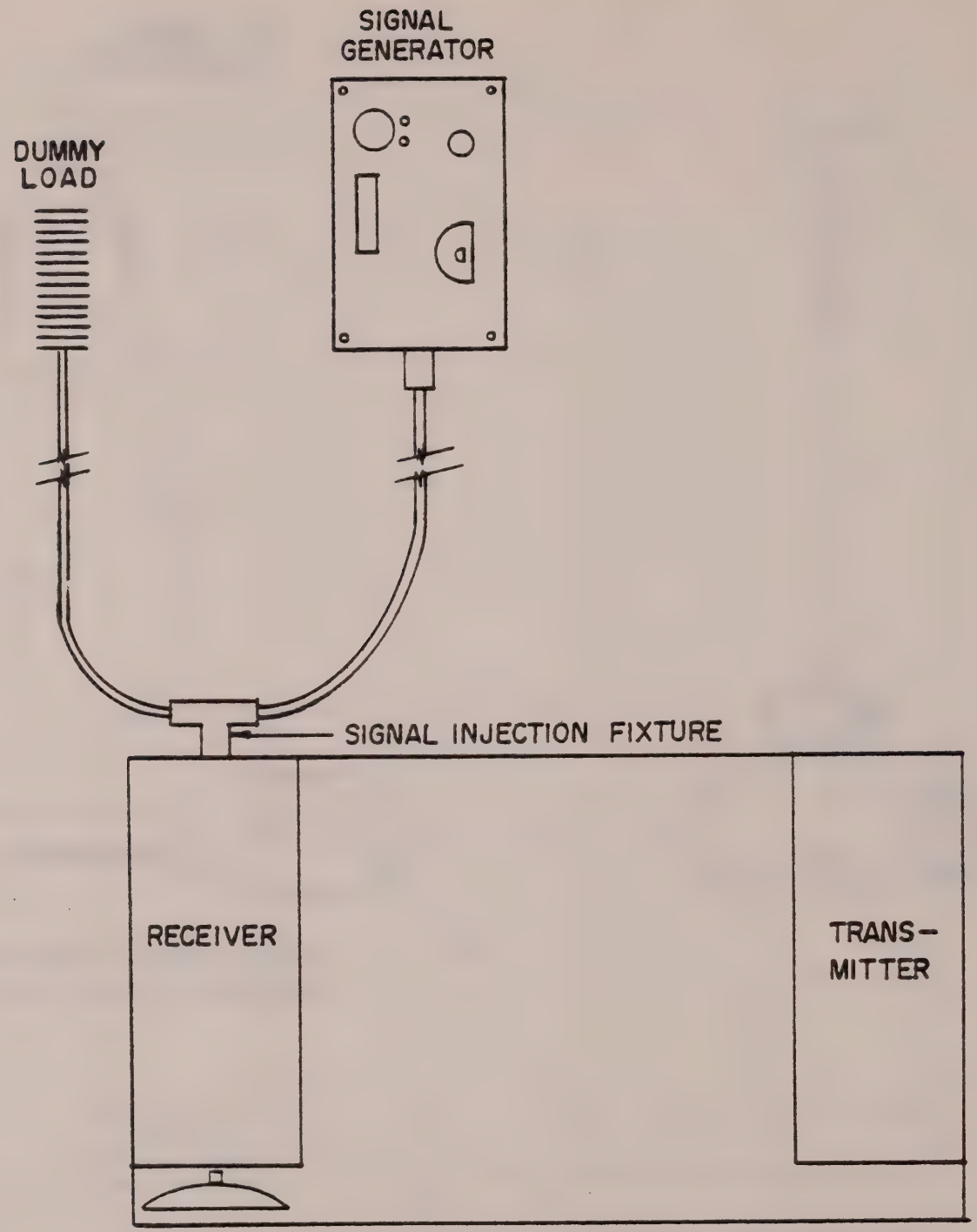
Step 3: With the connections remaining as in Figure 9-8, without changing the generator attenuator setting, key the transmitter on by grounding P709. You should not notice any change in the 12 DB SINAD indication on the distortion meter. If there is any degradation, increase the attenuator setting to see how much. If your antenna system uses a <u>reject</u> type filter tuned to the receive frequency, and you do have some degradation, you may be able to tune it out--make <u>very small</u> adjustments to that filter while watching the distortion meter for a decrease in deflection.



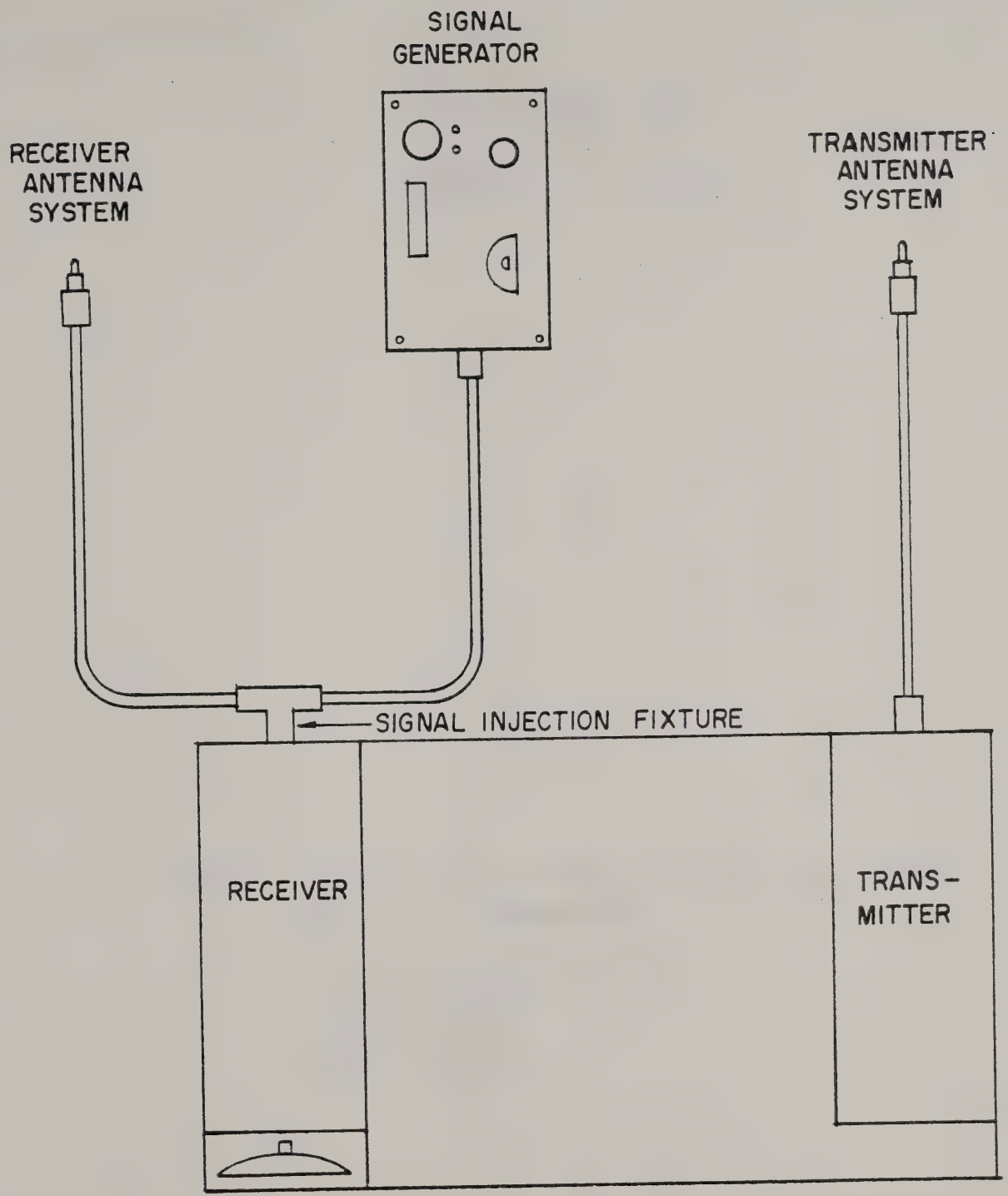

9-5 TEST FOR TRANSMITTER-RECEIVER INTERFERENCE WITHIN THE REPEATER




9-6 SIGNAL INJECTION FIXTURE




## 9-7 CALIBRATION OF SIGNAL INJECTION FIXTURE




9-8 TEST FOR TRANSMITTER-RECEIVER INTERFERENCE VIA ANTENNA SYSTEM

# SECTION 10

# PARTS LIST

NOTE: WHEN ORDERING PARTS, PLEASE INCLUDE THE FOLLOWING INFORMATION:

a. MODEL NUMBER (mcu 10r)
b. ITEM NUMBER
c. DESCRIPTION
d. PART NUMBER

# 10-1 RECEIVER BOARD

## RESISTORS

| ITEM | DESCRIPTION | PART NO. |
|---|---|---|
| R101A | 10K, 10%, ¼W | 4701-0103-042 |
| R102A | 4.7K, 10%, ¼W | 4701-0472-042 |
| R103 | | |
| R104 | | |
| R105 | 22K, 10%, ¼W | 4701-0223-042 |
| R106 | 10K, 10%, ¼W | 4701-0103-042 |
| R107 | 220ohm, 10%, ¼W | 4701-0221-042 |
| R108 | | |
| R109 | 1K, 10%, ¼W | 4701-0102-042 |
| R110 | 1.5K, 10%, ¼W | 4701-0152-042 |
| R111 | 220ohm, 10%, ¼W | 4701-0221-042 |
| R112 | 10K, 10%, ¼W | 4701-0103-042 |
| R113 | 22K, 10%, ¼W | 4701-0223-042 |
| R114 | 470ohm, 10%, ¼W | 4701-0471-042 |
| R115 | 150ohm, 10%, ¼W | 4701-0151-042 |
| R116 | 10K, 10%, ¼W | 4701-0103-042 |
| R117 | 470ohm, 10%, ¼W | 4701-0471-042 |
| R118 | 330ohm, 10%, ¼W | 4701-0331-042 |
| R119 | 2.2K, 10%, ¼W | 4701-0222-042 |
| R120 | | |
| R121 | 2.2K, 10%, ¼W | 4701-0222-042 |
| R122 | 10K, 10%, ¼W | 4701-0103-042 |
| R123 | 10K, 10%, ¼W | 4701-0103-042 |
| R124 | | |
| R125 | 47K, 10%, ¼W | 4701-0473-042 |
| R126 | | |
| R127 | | |
| R128 | 27K, 10%, ¼W | 4701-0273-042 |
| R129 | 1K, 10%, ¼W | 4701-0102-042 |
| R130 | 10K, 10%, ¼W | 4701-0103-042 |
| R131 | 56K, 10%, ¼W | 4701-0563-042 |
| R132 | 10K, Trimmer | 4751-0103-001 |
| R133 | 47K, 10%, ¼W | 4701-0473-042 |
| R134 | 1K, 10%, ¼W | 4701-0102-042 |
| R135 | 1.8K, 10%, ¼W | 4701-0182-042 |
| R136 | 1K, 10%, ¼W | 4701-0102-042 |
| R137 | 47K, 10%, ¼W | 4701-0473-042 |
| R138 | 39K, 10%, ¼W | 4701-0393-042 |
| R139 | 10K, 10%, ¼W | 4701-0103-042 |
| R140 | 4.7K, 10%, ¼W | 4701-0472-042 |
| R141 | 5.6K, 10%, ¼W | 4701-0562-042 |
| R142 | 2.2K, 10%, ¼W | 4701-0222-042 |
| R143 | 47ohm, 10%, ¼W | 4701-0470-042 |
| R144 | 4.7K, 10%, ¼W | 4701-0472-042 |
| R145 | 3.3K, 10%, ¼W | 4701-0332-042 |
| R146 | 2.2K, 10%, ¼W | 4701-0222-042 |
| R147 | 10K, 10%, ¼W | 4701-0103-042 |
| R148 | | |
| R149 | 18K, 10%, ¼W | 4701-0183-042 |
| R150 | 5.6K, 10%, ¼W | 4701-0562-042 |
| R151 | 3.3K, 10%, ¼W | 4701-0332-042 |
| R152 | 560ohm, 10%, ¼W | 4701-0561-042 |
| R153 | 47K, 10%, ¼W | 4701-0473-042 |
| R154 | 39ohm, 10%, 1W | 4701-0390-045 |
| R155 | 10K, 10%, ¼W | 4701-0103-042 |
| R156 | 56ohm, 10%, ¼W | 4701-0560-042 |
| R157 | 100ohm, 10%, ¼W | 4701-0101-042 |
| R158A | 68ohm, 10%, 2W | 4710-0680-041 |
| R158B | 68ohm, 10%, 2W | 4710-0680-041 |
| R159 | 5.6K, 10%, ¼W | 4701-0562-042 |
| R160 | 470ohm, 10%, ¼W | 4701-0471-042 |
| R161 | 220ohm, 10%, ¼W | 4701-0221-044 |
| R162 | | |
| R164 | 220ohm, 10%, ½W | 4701-0221-044 |
| R165 | 470ohm, 10%, ¼W | 4701-0471-042 |

## CAPACITORS

| ITEM | DESCRIPTION | PART NO. |
|---|---|---|
| C101A | 33PF, 10%, NPO, 50V (DISC) | 1500-0330-650 |
| C102 | | |
| C103 | 360PF, 5%, 50V (MICA) | 1506-0361-550 |
| C104 | 25PF, 10%, NPO, 50V (DISC) | 1500-0240-650 |
| C105 | 39PF, 10%, NPO, 50V (DISC) | 1500-0390-650 |
| C106 | .01 mfd, +80-20%, 12V (DISC) | 1502-0103-006 |
| C107 | 15PF, 10%, NPO, 50V (DISC) | 1500-0150-650 |
| C108 | .001 mfd, 20%, 50V (DISC) | 1523-0102-002 |
| C109 | 68PF, 5%, NPO, 50V (DISC) | 1524-0680-002 |
| C110 | .001 mfd, 20%, 50V (DISC) | 1523-0102-002 |
| C111 | 47PF, 5%, NPO, 50V (DISC) | 1524-0470-002 |
| C112 | 20PF, 10%, NPO, 50V (DISC) | 1500-0200-650 |
| C113 | 20PF, 10%, NPO, 50V (DISC) | 1500-0200-650 |
| C114 | .01 mfd, +80-20%, 12V (DISC) | 1502-0103-006 |
| C115 | 100PF, 5%, 50V (MICA) | 1507-0101-001 |
| C116 | 47PF, 5%, NPO, 50V (DISC) | 1524-0470-002 |
| C117 | 82PF, 5%, NPO, 50V (DISC) | 1524-0820-002 |
| C118 | 47PF, 5%, NPO, 50V (DISC) | 1524-0470-002 |
| C119 | .001 mfd, 20%, 50V (DISC) | 1523-0102-002 |
| C120 | 47PF, 5%, NPO, 50V (DISC) | 1524-0470-002 |
| C121 | 470 PF, 20%, 50V (DISC) | 1523-0471-002 |
| C122 | .01 mfd, +80-20%, 12V (DISC) | 1502-0103-006 |
| C123 | | |
| C124 | 5.6PF, 10%, NPO, 500V (DISC) | 1500-0569-905 |
| C125 | 5.6PF, 10%, NPO, 500V (DISC) | 1500-0569-905 |
| C126 | 47PF, 5%, NPO, 50V (DISC) | 1524-0470-002 |
| C127 | .01 mfd, +80-20%, 12V (DISC) | 1502-0103-006 |
| C128 | .01 mfd, +80-20%, 12V (DISC) | 1502-0103-006 |
| C129 | .01 mfd, +80-20%, 12V (DISC) | 1502-0103-006 |
| C130 | 220PF, 5%, 50V (MICA) | 1506-0221-550 |
| C131 | .01 mfd, +80-20%, 12V (DISC) | 1502-0103-006 |
| C132 | 3.9PF, 10%, NPO, 500V (DISC) | 1500-0399-905 |
| C133 | 300PF, 5%, 50V (MICA) | 1506-0301-550 |
| C134 | .01 mfd, +80-20%, 12V (DISC) | 1502-0103-006 |
| C135 | .01 mfd, +80-20%, 12V (DISC) | 1502-0103-006 |
| C136 | 68PF, 5%, NPO, 50V (DISC) | 1524-0680-002 |
| C137 | .2 mfd, +80-20%, 12V (DISC) | 1502-0204-006 |
| C138 | | |
| C139 | 68PF, 5%, 50V (MICA) | 1506-0680-550 |
| C140 | 82PF, 5%, NPO, 50V (DISC) | 1524-0820-002 |
| C141 | 200PF, 5%, 50V (MICA) | 1506-0201-550 |
| C142 | 680PF, 5%, 50V (MICA) | 1506-0681-550 |
| C143 | .2 mfd, +80-20%, 12V (DISC) | 1502-0204-006 |
| C144 | .2 mfd, +80-20%, 12V (DISC) | 1502-0204-006 |
| C145 | .2 mfd. +80-20%, 12V (DISC) | 1502-0204-006 |
| C146 | .001 mfd, 20%, 50V (DISC) | 1523-0102-002 |
| C147 | 39PF, 10%, NPO, 50V (DISC) | 1500-0390-650 |
| C148 | .2 mfd, +80-20%, 12V (DISC) | 1502-0204-006 |
| C149 | 68PF, 5%, NPO, 50V (DISC) | 1524-0680-002 |
| C150 | .001 mfd, 20%, 50V (DISC) | 1523-0102-002 |
| C151 | 1 mfd, 50V, 85°C (Electrolytic) | 1513-0010-004 |
| C152 | .001 mfd, 20%, 50V (DISC) | 1523-0102-002 |
| C153 | | |
| C154 | .001 mfd, 20%, 50V (DISC) | 1523-0102-002 |
| C155 | .001 mfd, 20%, 50V (DISC) | 1523-0102-002 |
| C156 | .002 mfd, 20%, 50V (DISC) | 1523-0202-002 |
| C157 | .1 mfd, 20%, 12V (DISC) | 1502-0104-005 |
| C158 | .047 mfd, 10%, 100V (Mylar Film) | 1508-0473-610 |
| C159 | 25 mfd, 10V, 85°C (Electrolytic) | 1513-0250-001 |
| C160 | | |
| C161 | .047 mfd, 10%, 100V (Mylar Film) | 1508-0473-610 |
| C162 | .01 mfd, +80-20%, 12V (DISC) | 1502-0103-006 |
| C163 | 250 mfd, 16V, 85°C (Electrolytic) | 1513-0251-002 |
| C164 | | |
| C165 | .01 mfd, +80-20%, 12V (DISC) | 1502-0103-006 |
| C166 | | |
| C167 | 100 mfd, 16V, 85°C (Electrolytic) | 1513-0101-002 |
| C168 | 100 mfd, 16V, 85°C (Electrolytic) | 1513-0101-002 |
| C169 | 100 mfd, 16V, 85°C (Electrolytic) | 1513-0101-002 |
| C170 | .01 mfd, +80-20%, 12V (DISC) | 1502-0103-006 |
| C171 | 470PF, 20%, 50V (DISC) | 1523-0471-002 |
| C172 | 100 mfd, 16V, 85°C (Electrolytic) | 1513-0101-002 |
| C173 | .1 mfd, +80-20%, 12V (DISC) | 1502-0104-005 |
| C174 | 250 mfd, 16V, 85°C (Electrolytic) | 1513-0251-002 |
| C175 | .0047 mfd, 10%, 100V (Mylar Film) | 1508-0472-610 |
| C176 | .01 mfd, +80-20%, 12V (DISC) | 1502-0103-006 |

# 10-1 RECEIVER BOARD

| ITEM | DESCRIPTION | PART NO. |
|---|---|---|
| | **DIODES** | |
| CR101A | Varicap,MV2209 | 4809-0000-001 |
| CR102 | | |
| CR103 | Sil,102-412,1N4148 | 4805-1241-200 |
| CR104 | Zener,8.2V | 4808-0000-009 |
| CR105 | Zener,6v,5%,MZ92-6.0B | 4808-0000-012 |
| | **TRANSISTORS** | |
| Q101 | NPN | 4801-0000-095 |
| Q102 | NPN | 4801-0000-095 |
| Q103 | NPN | 4801-0000-095 |
| Q104 | NPN | 4801-0000-095 |
| Q105 | FET | 4811-0000-005 |
| Q106 | FET | 4811-0000-030 |
| Q107 | PNP(Wht Top) | 4801-0000-060 |
| Q108 | NPN | 4801-0000-010 |
| Q109 | NPN | 4801-0000-010 |
| Q110 | NPN | 4801-0000-010 |
| Q111 | PNP(Wht Top) | 4801-0000-060 |
| Q112 | NPN | 4801-0000-010 |
| Q113 | NPN | 4801-0000-010 |
| Q114 | NPN | 4801-0000-005 |
| Q115 | NPN | 4802-0000-002 |
| | **COILS** | |
| L101A | Frequency Adjust | 1800-3191-406 |
| L102 | | |
| L103 | | |
| L104 | Oscillator Adjust | 1800-5100-521 |
| L105 | Choke,RF,.27 uhy | 1802-0278-008 |
| L106 | Choke,RF,15 uhy | 1802-0150-004 |
| L107 | Buffer Adjust | 1800-5100-511 |
| L108 | Choke,RF | 1800-5100-523 |
| L109 | Antenna Tune | 1800-5129-101 |
| L110 | Antenna Tune | 1800-5129-102 |
| L111 | Choke,RF | 1800-5100-522 |
| L112 | RF Tune | 1800-5129-103 |
| L113 | RF Tune | 1800-5129-102 |
| L114 | Mixer Injection Tuning | 1800-5129-104 |
| L115 | Mixer Injection Tuning | 1800-5129-102 |
| L116 | Choke,RF | 1800-5100-523 |
| L117 | Choke,RF,.1 uhy | 1802-0108-008 |
| L118 | Choke,RF,.22 uhy | 1802-0220-008 |
| L119 | Crystal Filter Tune | 1800-3248-001 |
| L120 | Crystal Filter Tune | 1800-3248-001 |
| L121 | Choke,RF,820 uhy | 1802-0000-002 |
| L122 | Choke,RF,820 uhy(Shielded) | 1803-3182-700 |
| L123 | Discriminator Adjust | 1800-3218-800 |
| L124 | Choke,RF,100 uhy | 1802-0101-008 |
| L125 | Choke,RF,15 uhy | 1802-0150-004 |
| L126 | Bead,Choke | 2502-0000-001 |
| L127 | Bead,Choke | 2502-0000-001 |
| L128 | Bead,Choke | 2502-0000-001 |
| L129 | Bead,Choke | 2502-0000-001 |
| L130 | Bead,Choke | 2502-0000-001 |
| L131 | Bead,Choke | 2502-0000-001 |
| L132 | Choke,RF,100 uhy | 1802-0101-008 |
| T101 | Coil,HR2A | 1800-3168-300 |
| | **THERMISTORS** | |
| RT101 | Thermistor | 5300-0000-001 |
| | **INTEGRATED CIRCUITS** | |
| IC101 | 10.7 MHz Amp | 3130-3167-901 |
| IC102 | Amp-Mixer | 3130-3167-901 |
| IC103 | Limiter-Discriminator | 3130-3157-603 |
| IC104 | Audio Amp | 3130-3248-801 |

| ITEM | DESCRIPTION | PART NO. |
|---|---|---|
| | **CRYSTALS** | |
| Y101 | Crystal,Receive(Specify Freq.) | 2329-0000-000 |
| Y102 | 10.245 MHz(Standard) | 2301-3151-601 |
| | **FILTERS** | |
| FL101 | Filter,Xtal 2P 10.7 MHz | 2705-3232-200 |
| FL102 | Filter,Xtal 2P 10.7 MHz | 2705-1306-600 |
| FL103 | Filter,Xtal 2P 10.7 MHz | 2705-3232-200 |
| FL104 | Filter,Ceramic | 2700-3209-500 |

# 10-2 TRANSMITTER BOARD

| ITEM | DESCRIPTION | PART NO. |
|---|---|---|
| | **RESISTORS** | |
| R201 | 47K, 10%, ¼W | 4701-0473-042 |
| R202 | 22K, 10%, ¼W | 4701-0223-042 |
| R203A | 47K, 10%, ¼W | 4701-0473-042 |
| R204 | 4.7K, 10%, ¼W | 4701-0472-042 |
| R205A | 10K, 10%, ¼W | 4701-0103-042 |
| R206 | 100ohm, 10%, ¼W | 4701-0101-042 |
| R208 | 22K, 10%, ¼W | 4701-0223-042 |
| R209 | 6.8K, 10%, ¼W | 4701-0682-042 |
| R210 | 10K, 10%, ¼W | 4701-0103-042 |
| R211 | 220ohm, 10%, ¼W | 4701-0221-042 |
| R212 | 10K, 10%, ¼W | 4701-0103-042 |
| R213 | 10K, 10%, ¼W | 4701-0103-042 |
| R214 | 680ohm, 10%, ¼W | 4701-0681-042 |
| R215 | 470ohm, 10%, ¼W | 4701-0471-042 |
| R216 | 10K, 10%, ¼W | 4701-0103-042 |
| R217 | 33ohm, 10%, ¼W | 4701-0330-044 |
| R218 | 10K, 10%, ¼W | 4701-0103-042 |
| R219 | 470ohm, 10%, ¼W | 4701-0471-042 |
| R220 | 10K, 10%, ¼W | 4701-0103-042 |
| R221 | 330ohm, 10%, ¼W | 4701-0331-042 |
| R222 | 470ohm, 10%, ¼W | 4701-0471-042 |
| R223 | 10K, 10%, ¼W | 4701-0103-042 |
| R224 | 220ohm, 10%, ¼W | 4701-0221-042 |
| R225 | 2.2K, 10%, ¼W | 4701-0222-042 |
| R226 | 10K, 10%, ¼W | 4701-0103-042 |
| R227 | 1K, Trimmer | 4751-0102-005 |
| R228 | 100ohm, 10%, ¼W | 4701-0101-042 |
| R229 | 10K, 10%, ¼W | 4701-0103-042 |
| R230 | 4.7K, 10%, ¼W | 4701-0472-042 |
| R231 | 100K, 10%, ¼W | 4701-0104-042 |
| R232 | 4.7K, 10%, ¼W | 4701-0472-042 |
| R233 | 100K, 10%, ¼W | 4701-0104-042 |
| R234 | 1.5meg, 10%, ¼W | 4701-0155-042 |
| R235 | 4.7K, 10%, ¼W | 4701-0472-042 |
| R236 | 120K, 10%, ¼W | 4701-0124-042 |
| R237 | 12K, 10%, ¼W | 4701-0123-042 |
| R238 | 470K, 10%, ¼W | 4701-0474-042 |
| R239 | 12K, 10%, ¼W | 4701-0123-042 |
| R240 | 10K, Trimmer | 4751-0103-001 |
| R241 | 470ohm, 10%, ¼W | 4701-0471-042 |
| R242A | 68ohm, 10%, 2W | 4710-0680-041 |
| R242B | 68ohm, 10%, 2W | 4710-0680-041 |
| R244 | 220ohm, 10%, ¼W | 4701-0221-044 |
| R245 | 220ohm, 10%, ¼W | 4701-0221-044 |
| | **CAPACITORS** | |
| C203 | 360PF, 5%, 50V(MICA) | 1506-0361-550 |
| C204 | 20PF, 10%, NPO, 50V(DISC) | 1500-0200-650 |
| C205 | .001 mfd, 20%, 50V(DISC) | 1523-0102-002 |
| C206 | 360PF, 5%, 50V(MICA) | 1506-0361-550 |
| C207 | 100PF, 5%, 50V(MICA) | 1507-0101-001 |
| C208 | 5PF, 10%, NPO, 500V(DISC) | 1500-0050-905 |
| C209 | 47PF, 5%, NPO, 50V(DISC) | 1524-0470-002 |
| C210 | 150PF, 5%, 50V(MICA) | 1506-0151-550 |
| C211 | .01 mfd, +80-20%, 12V(DISC) | 1502-0103-006 |
| C212 | 47PF, 5%, NPO, 50V(DISC) | 1524-0470-002 |
| C214 | 120PF, 5%, 50V(MICA) | 1506-0121-550 |
| C215 | 2.2PF, ±.25PF, NPO(DISC) | 1500-0229-205 |
| C216 | 47PF, 5%, NPO, 50V(DISC) | 1524-0470-002 |
| C217 | 150PF, 5%, 50V(MICA) | 1506-0151-550 |
| C218 | .01 mfd, +80-20%, 25V(DISC) | 1502-0103-004 |
| C219 | .001 mfd, 20%, 50V(DISC) | 1523-0102-002 |
| C220 | 8.2PF, 10%, NPO, 500V(DISC) | 1500-0829-905 |
| C221 | 2.2PF, ±.25PF, NPO(DISC) | 1500-0229-205 |
| C222 | 8.2PF, 10%, NPO, 500V(DISC) | 1500-0829-905 |
| C223 | 1PF, 10%(Composition) | 1510-0010-900 |
| C224 | 12PF, 10%, NPO, 500V(DISC) | 1500-0120-605 |
| C225 | 47PF, 5%, NPO(DISC) | 1524-0470-002 |
| C226 | .01 mfd, +80-20%, 25V(DISC) | 1502-0103-004 |
| C227 | 15PF, 10%, NPO, 50V(DISC) | 1500-0150-650 |
| C228 | 6.8PF, 10%, NPO, 500V(DISC) | 1500-0689-905 |
| C229 | 0.22PF, 10%(Composition) | 1510-0228-900 |
| C230 | 6.8PF, 10%, NPO, 500V(DISC) | 1500-0689-905 |
| C231 | 2.5-20PF, Trimmer | 1517-0000-019 |

| ITEM | DESCRIPTION | PART NO. |
|---|---|---|
| C232 | 82PF, 5%, NPO, 50V(DISC) | 1501-0820-008 |
| C233 | 2-6PF, Trimmer | 1517-0000-018 |
| C234 | 0.68PF, 10%(Composition) | 1510-0688-900 |
| C235 | 2-6PF, Trimmer | 1517-0000-018 |
| C236 | 0.68PF, 10%(Composition) | 1510-0688-900 |
| C237 | 2-6PF, Trimmer | 1517-0000-018 |
| C238 | 5PF, 10%, NPO, 500V(DISC) | 1500-0050-905 |
| C239 | 2PF, NPO | 1501-0020-001 |
| C240 | 470PF, 20%, 50V(DISC) | 1523-0471-002 |
| C241 | 10 mfd, 25V, 85°C (Electrolytic) | 1513-0100-003 |
| C242 | 10 mfd, 25V, 85°C (Electrolytic) | 1513-0100-003 |
| C243 | 470PF, 20%, 50V(DISC) | 1523-0471-002 |
| C244 | 470PF, 20%, 50V(DISC) | 1523-0471-002 |
| C245 | 10 mfd, 25V, 85°C (Electrolytic) | 1513-0100-003 |
| C246 | .01 mfd, +80-20%, 25V(DISC) | 1502-0103-004 |
| C247 | 2.2PF, ±.25PF, NPO(DISC) | 1500-0229-205 |
| C248 | 2.2PF, ±.25PF, NPO(DISC) | 1500-0229-205 |
| C249 | 15PF, 10%, NPO, 50V(DISC) | 1500-0150-650 |
| C251 | 15PF, 10%, NPO, 50V(DISC) | 1500-0150-650 |
| C252 | 1000 mfd, 16V, 85°C (Electrolytic) | 1513-0102-002 |
| C253 | .01 mfd, +80-20%, 25V(DISC) | 1502-0103-004 |
| C254 | 10 mfd, 25V, 85°C (Electrolytic) | 1513-0100-003 |
| C255 | 100 mfd, 16V, 85°C (Electrolytic) | 1513-0101-002 |
| C256 | .01 mfd, +80-20%, 12V(DISC) | 1502-0103-006 |
| C257 | 10 mfd, 25V, 85°C (Electrolytic) | 1513-0100-003 |
| C258 | .001 mfd, 20%, 50V(DISC) | 1523-0102-002 |
| C259 | 10PF, 10%, NPO, 500V(DISC) | 1500-0100-605 |
| C260 | .01 mfd, +80-20%, 12V(DISC) | 1502-0103-006 |
| C261 | 1 mfd, 50V, 85°C (Electrolytic) | 1513-0010-004 |
| C262 | .0033 mfd, 10%, 100V(Mylar Film) | 1508-0332-610 |
| C263 | .033 mfd, 10%, 100V(Mylar Film) | 1508-0333-610 |
| C264 | 150PF, 20%, 50V(DISC) | 1523-0151-002 |
| C265 | .01 mfd, +80-20%, 12V(DISC) | 1502-0103-006 |
| C266 | .1 mfd, +80-20%, 12V(DISC) | 1502-0104-005 |
| C267 | .1 mfd, +80-20%, 12V(DISC) | 1502-0104-005 |
| C268 | 10PF, 10%, NPO, 500V(DISC) | 1500-0100-605 |
| C269 | .01mfd, +80-20%, 25V(DISC) | 1502-0103-004 |
| C270 | 3.9PF, +.25PF, NPO(DISC) | 1500-0399-205 |
| C271 | .01 mfd, +80-20%, 12V(DISC) | 1502-0103-006 |
| | **DIODES** | |
| CR201A | Varicap, MV2209 | 4809-0000-001 |
| CR203 | Sil Rect, 1N4002 | 4806-0000-004 |
| CR204 | Sil Rect, 1N4002 | 4806-0000-004 |
| CR205 | Sil Rect, 1N4002 | 4806-0000-004 |
| CR206 | Sil Rect, 1N4002 | 4806-0000-004 |
| CR207 | Zener, 6V, 5% MZ92-6.0B | 4808-0000-012 |
| CR208 | Zener, 8.2V, 1N4738A | 4808-0000-009 |
| CR209 | Sil, 1N4148, 102-412 | 4805-1241-200 |
| CR210 | Sil, 1N4148, 102-412 | 4805-1241-200 |
| CR211 | Sil, 1N4148, 102-412 | 4805-1241-200 |
| CR212 | Zener, 6V, 5% MZ92-6.0B | 4808-0000-012 |
| | **TRANSISTORS** | |
| Q201 | Silicon, NPN(Blu Top) | 4801-0000-003 |
| Q202 | Silicon, NPN(Red Top) | 4801-0000-035 |
| Q203 | NPN, RF Power | 4804-3169-605 |
| Q204 | NPN, RF Power | 4804-3169-605 |
| Q205 | NPN, RF Power | 4804-3169-607 |
| Q206 | NPN | 4802-0000-002 |
| Q207 | NPN | 4801-0000-005 |
| Q208 | NPN | 4802-0000-002 |
| | **THERMISTORS** | |
| RT201 | Thermistor | 5300-0000-004 |
| RT202 | Thermistor | 5300-0000-001 |
| | **INTEGRATED CIRCUITS** | |
| IC201 | Speech Amp | 3130-3167-909 |

| ITEM | DESCRIPTION | PART NO. |
|---|---|---|
| | **COILS** | |
| L201A | Frequency Adjust | 1800-3247-201 |
| L204 | Oscillator,Output | 1800-3191-404 |
| L205 | Buffer,input | 1800-3191-405 |
| L206 | Choke,RF,5.6 uhy | 1802-0569-008 |
| L207 | Buffer,input | 1800-3191-405 |
| L208 | Buffer,input | 1800-3191-405 |
| L209 | Choke,RF,.68 uhy | 1802-0688-003 |
| L210 | Tripler,output | 1800-5100-524 |
| L211 | Tripler,output | 1800-5100-520 |
| L212 | Tripler,input | 1800-5100-520 |
| L213 | Choke,RF,.47 uhy | 1802-0478-008 |
| L214 | Doubler,output | 1800-5100-511 |
| L215 | Doubler,output | 1800-5100-511 |
| L216 | | |
| L217 | RF,inductor | 1802-5125-904 |
| L218 | RF,inductor | 1801-3247-401 |
| L219 | RF,inductor | 1801-3247-401 |
| L220 | RF,inductor | 1801-3247-401 |
| L221 | RF,Bead Assy. | 2502-3254-101 |
| L222 | RF,Bead Assy. | 2502-3254-101 |
| L223 | RF,Bead Assy. | 2502-3254-101 |
| L224 | RF,Inductor | 1801-3247-401 |
| L225 | RF,Inductor | 1801-3247-401 |
| L226 | RF,Bead Assy. | 2502-3254-101 |
| L227 | RF,Bead Assy. | 2502-3254-101 |
| | **ELECTRICAL COMPONENTS** | |
| K201 | Relay | 4500-0000-006 |

| ITEM | DESCRIPTION | PART NO. |
|---|---|---|

# 10-3 LED DISPLAY BOARD 302-485

| ITEM | DESCRIPTION | PART NO. |
|---|---|---|
| | **RESISTORS** | |
| R401 | 470ohm, 10%, ¼W | 4701-0471-042 |
| R402 | 330ohm, 10%, ¼W | 4701-0331-044 |
| | **DIODES** | |
| LD401 | Diode LED RED | 4810-1282-900 |
| LD402 | Diode LED GRN | 4810-1299-300 |

| ITEM | DESCRIPTION | PART NO. |
|---|---|---|

# 10-4 REGULATOR BOARD 302-032

| ITEM | DESCRIPTION | PART NO. |
|---|---|---|
| | **RESISTORS** | |
| R401 | 1K, 10%, ½W | 4701-0102-042 |
| R402 | 1.5K, 10%, ½W | 4701-0152-042 |
| R403 | 10ohm, 10%, ½W | 4701-0100-042 |
| R404 | 470ohm, 5%, ½W | 4701-0471-032 |
| R405 | 100ohm, Trimmer | 4751-0101-005 |
| R406 | 470ohm, 5%, ½W | 4701-0471-032 |
| | **CAPACITORS** | |
| C401 | .05 mfd, +80-20%, 25v(DISC) | 1502-0503-004 |
| | **DIODES** | |
| CR401 | Zener, 6v, ±5%, 500MW | 4801-0000-140 |
| | **TRANSISTORS** | |
| Q401 | NPN | 4801-0000-005 |
| Q402 | NPN | 4801-0000-010 |

| ITEM | DESCRIPTION | PART NO. |
|---|---|---|

# 10-5 TONE/CONTROL BOARD 504-005

| ITEM | DESCRIPTION | PART NO. |
|---|---|---|
| | **RESISTORS** | |
| R701 | 22K,10%,¼W | 4701-0223-042 |
| R702 | 22K,10%,¼W | 4701-0223-042 |
| R703 | 22K,10%,¼W | 4701-0223-042 |
| R704 | 10K,10%,¼W | 4701-0103-042 |
| R705 | 470ohm,10%,¼W | 4701-0471-042 |
| R706 | 10K,10%,¼W | 4701-0103-042 |
| R707 | 4.7K,10%,¼W | 4701-0472-042 |
| R708 | 22K,10%,¼W | 4701-0223-042 |
| R709 | 22K,10%,¼W | 4701-0223-042 |
| R710 | 22K,10%,¼W | 4701-0223-042 |
| R711 | 10K,10%,¼W | 4701-0103-042 |
| R712 | 470ohm,10%,¼W | 4701-0471-042 |
| R713 | 10K,10%,¼W | 4701-0103-042 |
| R714 | 4.7K,10%,¼W | 4701-0472-042 |
| R715 | 22K,10%,¼W | 4701-0223-042 |
| R716 | 22K,10%,¼W | 4701-0223-042 |
| R717 | 22K,10%,¼W | 4701-0223-042 |
| R718 | 10K,10%,¼W | 4701-0103-042 |
| R719 | 470ohm,10%,¼W | 4701-0471-042 |
| R720 | 10K,10%,¼W | 4701-0103-042 |
| R721 | 4.7K,10%,¼W | 4701-0472-042 |
| R722 | 4.7K,10%,¼W | 4701-0472-042 |
| R723 | 4.7K,10%,¼W | 4701-0472-042 |
| R724 | 4.7K,10%,¼W | 4701-0472-042 |
| R725 | 22K,10%,¼W | 4701-0223-042 |
| R726 | 4.7K,10%,¼W | 4701-0472-042 |
| R727 | 10K,10%,¼W | 4701-0103-042 |
| R728 | 10K,Trimmer | 4751-0103-001 |
| R729 | 1K,10%,¼W | 4701-0102-042 |
| R730 | 1K,10%,¼W | 4701-0102-042 |
| R731 | 10K,10%,¼W | 4701-0103-042 |
| R732 | 10K,10%,¼W | 4701-0103-042 |
| R733 | 4.7K,10%,¼W | 4701-0472-042 |
| R734 | 220ohm,10%,¼W | 4701-0221-042 |
| R735 | 3.3meg,10%,¼W | 4701-0335-042 |
| R736 | 220ohm,10%,¼W | 4701-0221-042 |
| R737 | 10K,10%,¼W | 4701-0103-042 |
| R738 | 1.5meg,10%,¼W | 4701-0155-042 |
| R739 | 22K,10%,¼W | 4701-0223-042 |
| R740 | 1K,10%,¼W | 4701-0102-042 |
| R741 | 220ohm,10%,¼W | 4701-0221-042 |
| R742 | 33K,10%,¼W | 4701-0333-042 |
| R743 | 33K,10%,¼W | 4701-0333-042 |
| R744 | 33K,10%,¼W | 4701-0333-042 |
| R745 | 1.5meg,10%,¼W | 4701-0155-042 |
| R746 | 220K,5%,¼W | 4701-0224-042 |
| R747 | 100ohm,10%,¼W | 4701-0101-042 |
| R748 | 2.2K,10%,¼W | 4701-0222-042 |
| R749 | 10K,10%,¼W | 4701-0103-042 |
| R751 | 100K,10%,¼W | 4701-0104-042 |
| R753 | 10K,10%,¼W | 4701-0103-042 |
| R754 | 10K,10%,¼W | 4701-0103-042 |
| R755 | 10K,10%,¼W | 4701-0103-042 |
| R756 | 10K,10%,¼W | 4701-0103-042 |
| R757 | 100K,10%,¼W | 4701-0104-042 |
| R758 | 10K,10%,¼W | 4701-0103-042 |
| R759 | 10K,10%,¼W | 4701-0103-042 |
| R760 | 10K,10%,¼W | 4701-0103-042 |
| R761 | 180ohm,10%,¼W | 4701-0181-042 |
| R762 | 33K,10%,¼W | 4701-0333-042 |
| R763 | 33K,10%,¼W | 4701-0333-042 |
| R764 | 33K,10%,¼W | 4701-0333-042 |
| | **CAPACITORS** | |
| C701 | .068 mfd,10%,100v(Mylar Film) | 1508-0687-610 |
| C702 | .068 mfd,10%,100v(Mylar Film) | 1508-0687-610 |
| C703 | .068 mfd,10%,100v(Mylar Film) | 1508-0687-610 |
| C704 | 25 mfd,10v,85°C (Electrolytic) | 1513-0250-001 |
| C705 | 25 mfd,10v,85°C (Electrolytic) | 1513-0250-001 |
| C706 | .0033 mfd,10%,100V(Mylar Film) | 1508-0332-610 |
| C708 | 1000 mfd,16v,85°C (Electrolytic) | 1513-0102-002 |
| C709 | .002 mfd,20%,50v(DISC) | 1523-0202-002 |
| C710 | .002 mfd,20%,50v(DISC) | 1523-0202-002 |
| C711 | .002 mfd,20%,50v(DISC) | 1523-0202-002 |
| C712 | .002 mfd,20%,50v(DISC) | 1523-0202-002 |
| C713 | .01 mfd,+80-20%,12v(DISC) | 1502-0103-006 |
| C714 | 100 mfd,16v,85°C (Electrolytic) | 1513-0101-002 |
| C715 | 250 mfd,16v,85°C (Electrolytic) | 1513-0251-002 |
| C716 | .047 mfd,10%,100v(Mylar Film) | 1508-0473-610 |
| C717 | .047 mfd,10%,100V(Mylar Film) | 1508-0473-610 |

| ITEM | DESCRIPTION | PART NO. |
|---|---|---|
| | **DIODES** | |
| CR701 | Sil,1N4148,102-412 | 4805-1241-200 |
| CR702 | Sil,1N4148,102-412 | 4805-1241-200 |
| CR703 | Sil,1N4148,102-412 | 4805-1241-200 |
| CR704 | Sil,1N4148,102-412 | 4805-1241-200 |
| CR705 | Sil,1N4148,102-412 | 4805-1241-200 |
| CR706 | Sil,1N4148,102-412 | 4805-1241-200 |
| CR707 | Sil,1N4148,102-412 | 4805-1241-200 |
| CR708 | Sil,1N4148,102-412 | 4805-1241-200 |
| CR709 | Sil,1N4148,102-412 | 4805-1241-200 |
| CR710 | Sil,1N4148,102-412 | 4805-1241-200 |
| CR711 | Sil,1N4148,102-412 | 4805-1241-200 |
| CR712 | Sil,1N4148,102-412 | 4805-1241-200 |
| CR713 | Sil,1N4148,102-412 | 4805-1241-200 |
| CR714 | Sil,1N4148,102-412 | 4805-1241-200 |
| CR715 | Sil,1N4148,102-412 | 4805-1241-200 |
| CR716 | Sil,1N4148,102-412 | 4805-1241-200 |
| CR717 | Sil,1N4148,102-412 | 4805-1241-200 |
| CR718 | Sil,1N4148,102-412 | 4805-1241-200 |
| CR719 | Sil,1N4148,102-412 | 4805-1241-200 |
| CR720 | Germ,102-339 | 4807-1233-900 |
| CR721 | Sil,102-412 | 4805-1241-200 |
| LD701 | Diode LED RED | 4810-1282-900 |
| LD702 | Diode LED RED | 4810-1282-900 |
| LD703 | Diode LED RED | 4810-1282-900 |
| | **TRANSISTORS** | |
| Q701 | NPN | 4801-0000-010 |
| Q702 | NPN | 4801-0000-010 |
| Q703 | NPN | 4801-0000-010 |
| Q704 | NPN | 4801-0000-010 |
| Q705 | NPN | 4801-0000-010 |
| Q706 | NPN | 4801-0000-010 |
| Q707 | NPN | 4801-0000-010 |
| Q708 | PNP(Wht Top) | 4801-0000-060 |
| Q709 | PNP(Wht Top) | 4801-0000-060 |
| Q710 | NPN | 4801-0000-010 |
| Q711 | NPN | 4801-0000-010 |
| Q712 | PNP(Wht Top) | 4801-0000-060 |
| Q713 | NPN | 4801-0000-010 |
| Q714 | NPN | 4801-0000-010 |
| Q715 | NPN | 4801-0000-010 |
| Q716 | NPN | 4801-0000-010 |
| Q717 | NPN | 4801-0000-010 |
| Q718 | NPN | 4801-0000-010 |

# 10-6 TONE AUXILIARY BOARD 504-009

| ITEM | DESCRIPTION | PART NO. |
|---|---|---|
| | **RESISTORS** | |
| R801 | 22K, 10%, ¼W | 4701-0223-042 |
| R802 | 22K, 10%, ¼W | 4701-0223-042 |
| R803 | 22K, 10%, ¼W | 4701-0223-042 |
| R804 | 10K, 10%, ¼W | 4701-0103-042 |
| R805 | 470ohm, 10%, ¼W | 4701-0471-042 |
| R806 | 10K, 10%, ¼W | 4701-0103-042 |
| R807 | 4.7K, 10%, ¼W | 4701-0472-042 |
| R808 | 22K, 10%, ¼W | 4701-0223-042 |
| R809 | 22K, 10%, ¼W | 4701-0223-042 |
| R810 | 22K, 10%, ¼W | 4701-0223-042 |
| R811 | 10K, 10%, ¼W | 4701-0103-042 |
| R812 | 470ohm, 10%, ¼W | 4701-0471-042 |
| R813 | 10K, 10%, ¼W | 4701-0103-042 |
| R814 | 4.7K, 10%, ¼W | 4701-0472-042 |
| R815 | 22K, 10%, ¼W | 4701-0223-042 |
| R816 | 22K, 10%, ¼W | 4701-0223-042 |
| R817 | 22K, 10%, ¼W | 4701-0223-042 |
| R818 | 10K, 10%, ¼W | 4701-0103-042 |
| R819 | 470ohm, 10%, ¼W | 4701-0471-042 |
| R820 | 10K, 10%, ¼W | 4701-0103-042 |
| R821 | 4.7K, 10%, ¼W | 4701-0472-042 |
| R822 | 22K, 10%, ¼W | 4701-0223-042 |
| R823 | 22K, 10%, ¼W | 4701-0223-042 |
| R824 | 22K, 10%, ¼W | 4701-0223-042 |
| R825 | 10K, 10%, ¼W | 4701-0103-042 |
| R826 | 470ohm, 10%, ¼W | 4701-0471-042 |
| R827 | 10K, 10%, ¼W | 4701-0103-042 |
| R828 | 4.7K, 10%, ¼W | 4701-0472-042 |
| R829 | 4.7K, 10%, ¼W | 4701-0472-042 |
| R830 | 4.7K, 10%, ¼W | 4701-0472-042 |
| R831 | 4.7K, 10%, ¼W | 4701-0472-042 |
| R832 | 33K, 10%, ¼W | 4701-0333-042 |
| R833 | 33K, 10%, ¼W | 4701-0333-042 |
| R834 | 33K, 10%, ¼W | 4701-0333-042 |
| R835 | 33K, 10%, ¼W | 4701-0333-042 |
| | **CAPACITORS** | |
| C801 | .068 mfd, 10%, 100v(Mylar Film) | 1508-0687-610 |
| C802 | .068 mfd, 10%, 100v(Mylar Film) | 1508-0687-610 |
| C803 | .068 mfd, 10%, 100v(Mylar Film) | 1508-0687-610 |
| C804 | .068 mfd, 10%, 100v(Mylar Film) | 1508-0687-610 |
| C805 | 25 mfd, 10v, 85°C (Electrolytic) | 1513-0250-001 |
| C806 | 25 mfd, 10v, 85°C (Electrolytic) | 1513-0250-001 |
| | **DIODES** | |
| CR801 | Sil, 1N4148, 102-412 | 4805-1241-200 |
| CR802 | Sil, 1N4148, 102-412 | 4805-1241-200 |
| CR803 | Sil, 1N4148, 102-412 | 4805-1241-200 |
| CR804 | Sil, 1N4148, 102-412 | 4805-1241-200 |
| CR805 | Sil, 1N4148, 102-412 | 4805-1241-200 |
| CR806 | Sil, 1N4148, 102-412 | 4805-1241-200 |
| CR807 | Sil, 1N4148, 102-412 | 4805-1241-200 |
| CR808 | Sil, 1N4148, 102-412 | 4805-1241-200 |
| CR809 | Sil, 1N4148, 102-412 | 4805-1241-200 |
| CR810 | Sil, 1N4148, 102-412 | 4805-1241-200 |
| CR811 | Sil, 1N4148, 102-412 | 4805-1241-200 |
| CR812 | Sil, 1N4148, 102-412 | 4805-1241-200 |
| CR813 | Sil, 1N4148, 102-412 | 4805-1241-200 |
| CR814 | Sil, 1N4148, 102-412 | 4805-1241-200 |
| CR815 | Sil, 1N4148, 102-412 | 4805-1241-200 |
| CR816 | Sil, 1N4148, 102-412 | 4805-1241-200 |
| LD801 | Diode LED RED | 4810-1282-900 |
| LD802 | Diode LED RED | 4810-1282-900 |
| LD803 | Diode LED RED | 4810-1282-900 |
| LD804 | Diode LED RED | 4810-1282-900 |

| ITEM | DESCRIPTION | PART NO. |
|---|---|---|
| | **TRANSISTORS** | |
| Q801 | NPN | 4801-0000-010 |
| Q802 | NPN | 4801-0000-010 |
| Q803 | NPN | 4801-0000-010 |
| Q804 | NPN | 4801-0000-010 |
| Q805 | NPN | 4801-0000-010 |
| Q806 | NPN | 4801-0000-010 |
| Q807 | NPN | 4801-0000-010 |
| Q808 | NPN | 4801-0000-010 |

## 10-7 TONE ENCODER-DECODER BD. 302-508

| ITEM | DESCRIPTION | PART NO. |
|---|---|---|
| | **RESISTORS** | |
| R601 | 130K, 10%, ¼W | 4701-0134-032 |
| R602 | 91K, 10%, ¼W | 4701-0913-032 |
| R604 | 15K, 10%, ¼W | 4701-0153-042 |
| R605 | 10K, Trimmer | 4751-0103-002 |
| R607 | 100K, 10%, ¼W | 4701-0104-042 |
| | **CAPACITORS** | |
| C601 | .01 mfd, +80-20%, 12v (DISC) | 1502-0103-006 |
| C602 | .01 mfd, +80-20%, 12v (DISC) | 1502-0103-006 |
| C603 | 15 mfd, ±20%, 10v (TANT) | 1515-0150-002 |
| C604 | .2 mfd, +80-20%, 12v (DISC) | 1502-0204-006 |
| C605 | .01 mfd, +80-20%, 12v (DISC) | 1502-0103-006 |
| C606 | 25 mfd, 10v, 85°C (Electrolytic) | 1513-0250-001 |
| C607 | 15 mfd, ±20%, 10v (TANT) | 1515-0150-002 |
| C608 | .01 mfd, +80-20%, 12v (DISC) | 1502-0103-006 |
| C609 | .1 mfd, +80-20%, 12v (DISC) | 1502-0104-005 |
| C610 | .01 mfd, +80-20%, 12v (DISC) | 1502-0103-006 |
| | **INTEGRATED CIRCUITS** | |
| IC601 | I.C. | 3133-5114-805 |
| IC602 | I.C. | 3133-5114-801 |
| IC603 | I.C. (Specify Frequency) | 3133-5114-804 |
| IC604 | I.C. | 3133-5114-802 |
| IC605 | I.C. | 3133-5114-803 |

| ITEM | DESCRIPTION | PART NO. |
|---|---|---|

## 10-8 TONE ENCODER BOARD 302-508

| ITEM | DESCRIPTION | PART NO. |
|---|---|---|
| | **RESISTORS** | |
| R605 | 10K, Trimmer | 4751-0103-002 |
| R607 | 100K, 10%, ¼W | 4701-0104-042 |
| | **CAPACITORS** | |
| C604 | .2 mfd, +80-20%, 12v (DISC) | 1502-0204-006 |
| C605 | .01 mfd, +80-20%, 12v (DISC) | 1502-0103-006 |
| C606 | 25 mfd, 10v, 85°C (Electrolytic) | 1513-0250-001 |
| C609 | .1 mfd, +80-20%, 12v (DISC) | 1502-0104-005 |
| C610 | .01 mfd, +80-20%, 12v (DISC) | 1502-0103-006 |
| | **INTEGRATED CIRCUITS** | |
| IC603 | I.C. (Specify Frequency) | 3133-5114-804 |
| IC604 | I.C. | 3133-5114-802 |

| ITEM | DESCRIPTION | PART NO. |
|---|---|---|

# 10-9 CHASSIS ASSEMBLY

| ITEM | DESCRIPTION | PART NO. |
|---|---|---|
| | **ELECTRICAL COMPONENTS** | |
| R501 | 1meg,10%,½W | 4701-0105-044 |
| R502 | 7.5K,Squelch Control | 4750-3211-202 |
| R503 | 5K,Volume Control | 4750-3211-201 |
| C501 | .005mfd,1.4kv(DISC) | 1501-0502-002 |
| C502 | 500mfd,25v,85°C (Electrolytic) | 1511-0501-003 |
| C503 | 4200mfd,40v (Electrolytic) | 1516-0422-001 |
| C504 | .05mfd,+80-20%,25v(DISC) | 1502-0503-004 |
| FTC501 | .001mfd,20% (Feed Thru) | 1521-0102-001 |
| FTC502 | .001mfd,20% (Feed Thru) | 1521-0102-001 |
| FTC503 | .001mfd,20% (Feed Thru) | 1521-0102-001 |
| FTC504 | .001mfd,20% (Feed Thru) | 1521-0102-001 |
| FTC505 | .001mfd,20% (Feed Thru) | 1521-0102-001 |
| FTC506 | .001mfd,20% (Feed Thru) | 1521-0102-001 |
| FTC507 | .001mfd,20% (Feed Thru) | 1521-0102-001 |
| FTC508 | .001mfd,20% (Feed Thru) | 1521-0102-001 |
| FTC509 | .001mfd,20% (Feed Thru) | 1521-0102-001 |
| FTC510 | .001mfd,20% (Feed Thru) | 1521-0102-001 |
| FTC511 | .001mfd,20% (Feed Thru) | 1521-0102-001 |
| FTC512 | .001mfd,20% (Feed Thru) | 1521-0102-001 |
| FTC513 | .001mfd,20% (Feed Thru) | 1521-0102-001 |
| FTC514 | .001mfd,20% (Feed Thru) | 1521-0102-001 |
| FTC515 | .001mfd,20% (Feed Thru) | 1521-0102-001 |
| CR501 | Diode,Silicon,Rectifier | 4806-0000-004 |
| CR502 | Diode,Silicon,Rectifier | 4806-0000-004 |
| CR503 | Diode,Silicon,Rectifier | 4806-0000-005 |
| CR504 | Diode,Silicon,Rectifier | 4806-0000-005 |
| SPK501 | Speaker Assy | 1301-0000-003 |
| SW501 | Switch SPST | 5114-0000-001 |
| J501 | Connector,Microphone | 2105-0000-023 |
| J502 | Connector,Antenna | 2105-0000-020 |
| J503 | Connector,Antenna | 2105-0000-020 |
| IC501 | Module RF Amp UHF | 3132-5112-501 |
| Q501 | Transistor,SJ5149 | 4803-0000-005 |
| T501 | Transformer | 5604-5097-100 |
| F501 | Fuseholder | 2100-0000-003 |
| F502 | Fuseholder | 2100-0000-003 |
| F503 | Fuseholder | 2100-0000-003 |
| | Fuse,2 Amp 3AG | 5106-0000-004 |
| | Fuse,5 Amp,3AG | 5106-0000-008 |
| | Connector Housing,Male | 2109-5120-408 |
| | **MECHANICAL COMPONENTS** | |
| | Heat Sink | 5400-0000-001 |
| | Heat Sink | 5400-1285-601 |
| | Heat Sink | 5400-1260-900 |
| | Insulator Bushing | 2501-0000-001 |
| | Insulator Mica Washer | 3103-0000-001 |
| | Transistor Socket | 2108-0000-002 |
| | Shield | 2508-3400-500 |
| | Wrap | 1408-5401-400 |
| | Power Cord | 6041-3181-501 |
| | Terminal Strip | 2103-3008-004 |
| | Terminal Strip | 2103-5000-120 |
| | Capacitor Clamp | 2830-0000-002 |

# 10-10 MA-116 & MA-121 TONE BOARDS

| ITEM | DESCRIPTION | PART NO. |
|---|---|---|
| | **RESISTORS** | |
| R601* | 200K Var | 4751-0204-007 |
| R602* | 200K MF | 4709-3402-401 |
| R603* | 301K MF | 4709-3402-402 |
| R604* | 348K MF | 4709-3402-403 |
| R605* | 453K MF | 4709-3402-404 |
| R606* | 348K MF | 4709-3402-403 |
| R607* | 453K MF | 4709-3402-404 |
| R610* | 1K,10%,¼W | 4701-0102-042 |
| R611* | 220K,10%,¼W | 4701-0224-042 |
| R612 | 100K Var | 4751-0104-002 |
| R613 | 27K,10%,¼W | 4701-0273-042 |
| R614 | 27K,10%,¼W | 4701-0273-042 |
| R615 | 680K,10%,¼W | 4701-0684-042 |
| R616 | 18K,10%,¼W | 4701-0183-042 |
| R617* | 22K,10%,¼W | 4701-0223-042 |
| R618* | 10K Var | 4751-0103-002 |
| R619* | 18K,10%,¼W | 4701-0183-042 |
| R620 | 10K,10%,¼W | 4701-0103-042 |
| R621 | 4.7K,10%,¼W | 4701-0472-042 |
| R622 | 18K,10%,¼W | 4701-0183-042 |
| R623* | 680K,10%,¼W | 4701-0684-042 |
| R624* | 330K,10%,¼W | 4701-0334-042 |
| R625 | 10K,10%,¼W | 4701-0103-042 |
| R626* | 330K,10%,¼W | 4701-0334-042 |
| R627 | 22K,10%,¼W | 4701-0223-042 |
| R628* | 1K,10%,¼W | 4701-0102-042 |
| R629* | 180ohm,10%,¼W | 4701-0181-042 |
| R630* | 820ohm,10%,¼W | 4701-0821-042 |
| R631* | 100ohm,10%,¼W | 4701-0101-042 |
| R632 | 47K,10%,¼W | 4701-0473-042 |
| R633 | 15K,10%,¼W | 4701-0153-042 |
| R634 | 33K,10%,¼W | 4701-0333-042 |
| R635 | 15K,10%,¼W | 4701-0153-042 |
| R636 | 33K,10%,¼W | 4701-0333-042 |
| R637 | 15K,10%,¼W | 4701-0153-042 |
| | **CAPACITORS** | |
| C601* | 2700pf,5%,500V(MICA) | 1504-0272-505 |
| C602* | 2700pf,5%,500V(MICA) | 1504-0272-505 |
| C603 | .1 mfd,20%,12V(DISC) | 1502-0104-005 |
| C604 | .0047 mfd,10%,100V(MYLAR FILM) | 1508-0472-610 |
| C605 | .047 mfd,10%,100V(MYLAR FILM) | 1508-0473-610 |
| C606 | .01 mfd,10%,100V(MYLAR FILM) | 1508-0103-610 |
| C607 | .1 mfd,20%,12V(DISC) | 1502-0104-005 |
| C608 | .001 mfd,10%,100V(MYLAR FILM) | 1508-0102-610 |
| C609* | .1 mfd,20%,12V(DISC) | 1502-0104-005 |
| C610* | 50 mfd,10V,85D(ELECTROLYTIC) | 1513-0500-001 |
| C611 | 1 mfd,16V,85D(ELECTROLYTIC) | 1513-0010-002 |
| C612 | 1 mfd,16V,85D(ELECTROLYTIC) | 1513-0010-002 |
| C613 | 25 mfd,10V,85D(ELECTROLYTIC) | 1513-0250-001 |
| C614 | 10 mfd,16V,85D(ELECTROLYTIC) | 1513-0100-001 |
| C615 | 15 mfd,16V,85D(ELECTROLYTIC) | 1513-0150-002 |
| | **DIODES** | |
| CR601 | SIL | 4805-1241-200 |
| CR602 | SIL | 4805-1241-200 |
| CR603* | ZENER 8.2V | 4808-0000-009 |
| CR604 | SIL | 4805-1241-200 |
| | **INTEGRATED CIRCUITS** | |
| IC601* | I.C. | 3130-3167-909 |
| IC602* | I.C. | 3130-3167-909 |
| IC603* | I.C. | 3130-3167-909 |
| IC604 | I.C. | 3130-3157-621 |
| | **TRANSISTORS** | |
| Q601 | NPN | 4801-0000-010 |
| Q602 | NPN | 4801-0000-010 |
| Q603 | NPN | 4801-0000-010 |

* Indicates components also used on MA-121

## LIMITED WARRANTY

1. The warranty applies to the original or subsequent owners of the product for a period of 90 days from the original purchase date.
2. We agree to repair or replace all parts showing defects in material or workmanship.
3. Warranty service will be provided free of charge if unit is delivered to the Regency dealer of original purchase, or to us intact, transportation charges prepaid, within 90 days of the date of sale to the original purchaser.
4. The warranty does not apply to units subject to misuse, neglect, accidents, incorrect wiring not our own, improper installation, or units used in violation of the instructions furnished by us. Nor does the warranty apply to units: damaged by lightning, excess current, repaired or altered by unauthorized personnel, or units with altered or removed serial numbers.
5. To have your unit serviced under the warranty return it, freight prepaid to dealer of original purchase, or:

Customer Service Department
Regency Electronics, Inc.
7707 Records Street
Indianapolis, Indiana 46226

- or -

Customer Service Department
Regency Communications, Inc.
1227 S. Patrick Drive
Satellite Beach, Fla. 32937

Only factory authorized personnel are authorized to perform warranty service.

6. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.
7. Warranty will not be in force unless a completed warranty registration card is received by Regency.